

## MILITARY MEDICINE

### ORIGINAL ARTICLES

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## Practical Aspects of Medicomilitary History\*

By

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I AM APPEARING before this conference today in two roles. In the first, I speak as a sort of modern Maecenas, the Roman, as you perhaps remember, who encouraged writers with something to say to go ahead and say it, though, unfortunately, I cannot promise you the pecuniary rewards which he offered. In the second role, I speak, unashamedly, as a promoter of the wares of my own organization, the Historical Unit, United States Army Medical Service. As I shall show you shortly, we shall be able to do a better job in that office if I can induce Army Medical Service officers to give us more to work with.

### THE POSSIBLE CONTRIBUTION OF MEDICAL OFFICERS TO MEDICOMILITARY HISTORY

Probably most of you have already seen *MILITARY MEDICINE* for January 1958. If so, you will recall the article, the first of a series, entitled "The Courageous Medics of Anzio." The author, Colonel Rollin L. Bauchspies, MC, who was one of them,

modestly ignores his own valor, but in an introduction, the late Major General Joseph I. Martin, who was Surgeon, Fifth U. S. Army, during the fighting in Italy and who therefore should know, praises the courage of Colonel Bauchspies and his predecessor, Colonel Jarrett B. Huddleston, MC. The ability they displayed, he said, was developed as the result of long individual training and preparation as well as from "the study of past events in war." The story of Anzio, he added, "now takes its place as a text for those who would aspire in future wars to high medical command."

Colonel Bauchspies' series could not have begun at a more opportune time for my purposes. It illustrates exactly the point I am trying to make. Here is a man who lived through the experiences he is relating, who had authentic data to supplement his own notes and observations, and whose writing is as vivid and interesting as it is informative and useful. I should like to persuade those of you who also have something to say to prepare your own experiences, as Regular Army Medical Service officers, in peacetime as well as in war, for similar publication. This is partly in your own self-interests, but even more, as the Civil War historian, Surgeon Woodward, expressed it, because the historical function is "one of the most important duties of the medical department of the Army."

The history of the U. S. Army Medical

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The views and opinions expressed in this article do not necessarily represent those of the Surgeon General, The Department of the Army, or the Department of Defense.

Department in World War II is now my principal responsibility. I am not downgrading in the least the excellent contributions of Medical Reserve officers to the published volumes when, as a Regular Army officer, I lament the fact that Reserve officers have provided the vast majority of the material for them. I was not in the Historical Unit when these histories were planned, and, as I shall indicate later, I have done my best to alter this situation. The fact remains, however, that in the volumes published to date, not more than half a dozen Regular Army Medical Service officers, most of them in preventive medicine, appear as authors.

I suspect that the chief reason Regular Army Medical officers write and publish so little, on the whole, is their failure to realize that they are quite as expert and experienced in their own professional and administrative fields as are their civilian counterparts in theirs. There is no justification for such a point of view. Clinical competence is not confined to civilian medicine, and neither in the peacetime nor the wartime Army could clinical medicine be properly utilized without a background of efficient administration.

Some very profitable articles could be written by Regular Army officers, from the fulness of their own knowledge, on such subjects as the experiences of an instructor assigned to the Reserve components of the Army; or the experiences of medical instructors at the service schools, such as Benning and Knox, as well as at this school at Brooke; or what the cadets at West Point are being taught about medical service, especially preventive medicine, which includes cold injury; or the experiences of an Army surgeon in the Zone of Interior. I blush to say that I contributed nothing for publication myself when I was Surgeon of the Fifth U. S. Army. I was kept very busy, it is true, but the chief reason I wrote nothing is because I did not then realize, as I do now, the value of what an officer in this position has to say.

In these and a variety of other fields, interesting, informative, and useful articles could be written concerning the practical,

down-to-earth experiences of those who have put official programs into effect. I wager that if their experiences were told, planning for these programs would promptly undergo a number of modifications.

There are also a number of clinical articles which might profitably be written. For example, I should like to know something about acute appendicitis at West Point. Here we have what amounts almost to a controlled experiment: the commonest of all surgical diseases, a selected group of young men, all within the same age group, in superb physical condition, and of unusual intelligence, and, finally, expert medical care readily available. What is the experience with rupture of the appendix in this group?

I should also like to know something about trauma in training—its incidence, its severity, how many man days are lost from it, what methods of prevention are being employed. Even our wartime material on this subject is none too adequate. In the same connection, a collective study of traffic accidents in the Army, both in the course of military duty and in men on leave, might stir us into more active measures of prevention.

Some excellent studies have come out of some Army hospitals, such as the blood studies from Walter Reed and the record of the unusual experience there with splenectomy of aplastic anemia. But, by and large, our clinical material is not being utilized as it should be. This is unfortunate. For one thing, much of it is unusual. For another, it is of special importance today when, because of prepaid insurance and for other reasons, clinical teaching material in civilian hospitals is becoming scantier and scantier.

At the present time, I am discussing with Brigadier General James H. Forsee, the Chief of Surgery at Walter Reed Army Hospital, the possibility of follow-up studies on patients treated in Army hospitals. We plan to start with gastrectomy for both malignant and nonmalignant disease and to begin the study with selling the patient, while he is still hospitalized, the concept of a systematic follow-up.

I could not be holding the discussions with

a better man. Thanks to General Forsee's foresight we had available the material for the major portion of one of our volumes on general surgery. When he was Commanding Officer of the 2d Auxiliary Surgical Group in the Mediterranean Theater of Operations, he wisely insisted that special records, which went into considerably more detail than the official records, be kept for all abdominal injuries, and he rode herd on their analysis after the war. In other words, he saw to it that what had happened was put down as soon as it had happened. As a result, this particular volume includes the largest series of abdominal injuries ever to be recorded, and reviewers have been almost universal in their praise of it. Without General Forsee's foresight, this volume would have taken a different, and probably a much less useful form.

Even before I assumed my present position, I had begun to regret that I had not provided for this kind of record during World War II. If I had to fight the war over again as medical executive officer of a field army, which God forbid, I should certainly see to it, no matter how active the fighting, that some provision of this sort was made. General Forsee occupies an almost exclusive category. We have frequently had a great deal of difficulty with the history of World War II because there were not more like him. Since we did not have what we needed, we had to do with what we had, and we frequently had to secure that in many devious ways.

Let me give you an example. We found ourselves extremely short of material about the condition of orthopedic casualties returned from overseas. This we needed for the volume on orthopedic surgery in the Zone of Interior. Several lines of endeavor were fruitless. Then, one of the editors of the neurosurgical volumes, not being a patient man, did not wait for my office, as is routine, to track down the current and final ranks of all the officers mentioned in the text but undertook the job himself. When he turned the correspondence over to the associate editor, she called to my attention

one reply, in which the neurosurgeon queried recalled, almost nostalgically, his days at Halloran General Hospital and the large numbers of patients he had surveyed on their arrival from overseas. This neurosurgeon, who lives in Washington, proved a goldmine. He led us to a Reserve orthopedic surgeon in Nashville, who has generously shared with us his mass of personal material. He led us, in turn, to a Medical Service Corps officer, also living in Washington, who is telling us the story of these returned casualties. This is a subject of particular importance because their excellent status was in sharp contrast to the generally poor condition of similar casualties returned from overseas during World War I.

#### CERTAIN TRICKS OF THE WRITING TRADE

I think you will agree with me, however, that a series of happy chances is not the best way in the world to secure historical material. So I would urge those of you who are now creating history, whether you acknowledge it or not, to set down events as they occur, to set them down in detail, and to let the results be known in the medical literature and be preserved in the Research and Archives Branch of my own unit, of which I shall speak more fully shortly.

I am the last man in the world to encourage a flow of half-baked publications. But I do think, if I may continue this flood of advice to those who know more than I about most subjects, that it is essential that young men in the service be trained to set down their own experiences. I suggest that you urge them to do so as you come into contact with them in the course of your official duties, and I also suggest that you mention to them that there is no such thing as good writing, there is only good re-writing.

Please understand that what I am pleading for today is material over and above the pound of flesh represented by the submission of required annual reports and the filling out of prescribed forms. One of the most dangerous implications of any form is the unwarranted inference by the person who fills it out that by that simple act he has con-

cluded his responsibilities. Personal notes and records of personal experiences have been of the greatest value in the preparation of the history, both to supplement basic data and to provide the overtones of interest that made one reviewer, at least, keep on reading because he wanted to see what came next.

Let me reply in advance to one possible objection to personal records: I am all in favor of documentation when it is available and when it is used with common sense. When it is not so used, it can easily lead to that particularly dangerous variety of pseudo-scholarship which so often creates the illusion of reality. For my own part, on the assumption that Army Medical Service officers are honorable men, I am quite willing to accept as truth an individual's recollection of what happened at a particular time or place, his presence there being documentation enough for most purposes.

I would plead, however, for the making of notes as a simple and painless way of providing basic data and of preserving ideas that otherwise would escape forever. Carry on your person notepads of the same standard size. Make one note to a slip. Make the notes both legible and comprehensible, so that you can read them and will know what they are about when you come back to them weeks and months hence. Then destroy the slips, or file them, as indicated, when the immediate need for them is past.

If you already have your own plan of action along these lines, I apologize to you for offering you another. I have always kept notes, but only recently have I begun to do it by this system, of which I am now the greatest champion. One of my associates insists that if you put down in this fashion every idea that occurs to you, you will find yourself the painless possessor of the complete outline of a paper or a book before you realize what you have accomplished. She persuaded the author of one of our planned volumes to do just that, and I must say that by the combination of his notes and hers, I saw this very thing happen a couple of weeks

ago. A few years ago I wouldn't have believed it possible.

#### THE HISTORICAL UNIT, U. S. ARMY MEDICAL SERVICE

Because I am not sure how much you know about the Historical Unit, I want to say a few words about it. It was originated in World War I, lapsed into inactivity in 1929, with the publication of the last volume of the history of that war, and was reactivated in August 1941, Brigadier General Albert C. Love being called out of retirement to head it. For almost two years he operated it with practically no space and with almost no help, proceeding, as he said, "on sufferance" and trying "not to attract adverse attention." Those days have long since passed.

At the present time, our major function is the preparation and publication of the history of the U. S. Army Medical Department in World War II. Chiefly in the future is the responsibility for the story of the Korean conflict. Continuing functions of my office range from the preparation of The Surgeon General's annual report to planning for the historical coverage of selected activities of the Army Medical Service. We also provide editorial service and publication assistance for all Army Medical facilities and personnel. A major job of this kind is now nearing completion,\* the revision and modification, under Department of Defense auspices, of the NATO handbook on emergency surgery for use by our Armed Forces. I think you will find this handbook, which will have an initial printing of 54,000 copies, very useful indeed.

I should like to say a special word about the Research and Archives Branch of the Historical Unit, both to solicit your contributions to it and to offer you its facilities for the publications I am urging you to produce.

This branch was not established formally until after the war, although General Love

\* This book, "Emergency War Surgery, NATO Handbook," came off the press in July.



gave his attention to its functions almost from the beginning of his tenure. In June 1946, the archives consisted of only 600 linear feet of material. Last year, we calculated that the material, which was filed in 272 four-drawer, legal-size storage cabinets, consisted of more than 2,300 linear feet. This branch also has access to the thousands of documents in storage depots elsewhere in the country.

Please help us to increase our resources. We can make good use of your publications, preferably in the form of reprints, and we will gladly receive any data of any kind. Don't destroy any of your personal material. Send it to us for evaluation and let us select what can usefully be filed. You have no idea how elastic our criterion of usefulness is.

In return, I offer you the services of this branch, though, I must warn you, not always immediately; the impossible, as you know, sometimes takes a little longer than the merely difficult. I am quite certain that we can help you, and I am sure that our mutual efforts will redound to the ultimate good of the Service.

#### THE HISTORY OF THE MEDICAL HISTORY OF WORLD WAR II

Now for the checkered history of the history of the Army Medical Department in World War II. As you perhaps know, the original plan was that the history should be prepared under the supervision of the National Research Council. General Love went along with this plan at first because, as he said, he did not then "have enough prestige to take issue with it." On his insistence, however, the nine clinical volumes to be written by civilian clinicians were to be supplemented by seven other volumes designed to cover the administrative, technical, and tactical activities of the Medical Department and to be written by Army Medical Service officers.

The original plan was not sound, and as time passed, it became increasingly clear that it was entirely impractical for civilian pro-

fessional men, no matter what their eminence, to record medicomilitary experiences in which they had never participated at all. The upshot was that in March 1944, The Surgeon General assumed the responsibility for the entire history, and a very wise and proper decision this was.

In the spring of 1946, eight years before I became associated with the Historical Unit, there was another change of plan which I must describe as regrettable. This was the decision that lay historians should write the administrative volumes of the history, on the ground that they would be more objective than Medical Service officers who had participated in the events. This line of reasoning, curiously, was directly contrary to the reasoning by which The Surgeon General had assumed the responsibility for the clinical volumes two years earlier.

The results were about what might have been expected. Only a single administrative volume has been published. It was published during my tenure but not with my editorial supervision. I cannot tell you the amount of time, effort, and sheer exasperation that have gone into the revision of two other volumes, presumably ready for press, but full of medicomilitary confusion inevitable because of the lack of orientation of lay historians in such complicated and highly specialized fields as, for example, medical logistics.

This policy has been reversed. Administrative volumes now in preparation and in the planning stage are the responsibility of military men. Major General Paul R. Hawley (Ret.), for instance, is chairman of the Editorial Board for the volume on training, and every chapter in this volume is being prepared by officers expert in their special fields. Major General S. B. Hays, The Surgeon General, is supervising the volume on supply. Colonel Douglas B. Kendrick, MC, the Regular Army medical officer who handled the blood program, sometimes almost single-handed, during World War II, is responsible for the volume on blood. And so on.

Another advantage of having Regular Army officers do this job is that they take it for granted that the work must be done within the time limits set. I pause to pay tribute to Major General Shambora, whose excellent chapter on Medical Department training between World Wars I and II came into my office a couple of weeks ago. I also have similarly excellent chapters from Major General George E. Armstrong (Ret.), the former Surgeon General, on Officer Candidate Schools and from Colonel Byron Steger, MC, on unit training.

General Love is a realistic man, and when the responsibility for the history was transferred to the Office of The Surgeon General in 1944, he pointed out the dangers of relying upon promises to perform and on no stronger pressures. His forebodings have been at least partly justified. All of the authors of our clinical volumes, most of them out of uniform when they did the work, have contributed on a voluntary basis. This has its obvious financial advantages for the taxpayers. With a few exceptions, these former medical officers have fulfilled their obligations competently and generously—though not always promptly. We are tied up on at least two volumes because one author, whose material is almost essential, has given us nothing but the promises upon which General Love looked with such skepticism in 1944.

#### THE UTILIZATION OF THE MEDICAL HISTORY OF WORLD WAR II

Exactly 100 years ago medicomilitary history came into being, with the publication, only two years after the end of the war, of the two volumes of the history of the Crimean War. The project was conceived and carried to completion by Andrew Smith, Director General of the British Army Medical Service, who was determined that no successor of his should have to encounter "the many difficulties and perplexities" which had been his own lot because there was nothing from previous wars to aid him in his gigantic task.

These volumes so impressed The Surgeon General of that day that at the very beginning of the Civil War, he recommended the establishment of a sanitary commission, to prevent the evils which England and France had been able only to "investigate and deplore." As the late Brigadier General Frank W. Weed, editor of the World War I Medical Department History, wrote in 1929, if there had existed during the Civil War a dependable medical record of earlier United States wars, epidemics might have been foreseen, even in those pre-epidemiology days, and diarrheas might have been prevented.

General Weed's reasoning is transferable to all subsequent wars, though the mere existence of a record of past wars is not enough. As Hanson W. Baldwin, military editor of the *New York Times*, has well expressed it, it is just as necessary to find readers for military histories as it is to find funds for their publication. We have paid heavily in the past for our negligence in finding them.

The reason why we did not find them is clear. The distribution of the Civil War history was via Congress and was for all practical purposes on a personal basis. The distribution of the World War I history was somewhat more efficient, but neither of these important historical series received the proper publicity, and their great potential usefulness in subsequent wars was therefore almost completely unfulfilled.

We are trying to avoid this error with the history of the U. S. Army Medical Department in World War II. About a year ago, when I presented this matter to The Surgeon General, the swiftness with which he authorized a promotion branch in my office was an indication of his awareness and appreciation of the potential usefulness of these volumes. This branch, which has functioned only since last August, is already proving how interest begets interest. Bookstores in New Orleans and New York, for instance, have altruistically supplied information for would-be purchasers on how

these volumes can be procured, which is, as you know, only from the Government Printing Office. Similar inquiries are daily received in my office.

The exhibit on the history set up here for your convenience has already been shown at the American College of Surgeons, at the Academy of Orthopaedic Surgery, and at a number of other meetings. It is scheduled for the American Medical Association meeting in June and the American Academy of Ophthalmology and Otolaryngology later in the year. A smaller exhibit, prepared for smaller meetings, was first shown at the New Orleans Academy of Ophthalmology last month. Please look out for our exhibits and mention them to your friends.

Reviews of our published volumes have been, on the whole, fair, generous, and favorable. Some reviewers have spelled out, in a most gratifying fashion, why these books should be in every physician's library. I think we have deserved the few adverse comments we have received. I can understand why some reviewers have exhibited a combination of shock at the delay in the publication of the history and surprise that it is finally appearing. I am in full agree-

ment with those who have pointed out that these books should have been available for the war that was not a war in Korea.

To date, 12 volumes in the Medical Department series have already been published, 11 of them since 1955. Three are in press, 26 others are in active preparation for press, and the number of our no-action volumes is no longer very large.

I need not point out to those of you who are here today that the value of these volumes goes far beyond their historical worth. They are of current usefulness to a wide variety of persons. The young men now in medical school or in training as internes and residents will find the military service which lies ahead of most of them greatly simplified if they know what is in them. Instructors in the MEND program and those engaged in the training of Reserve Army officers will also find them useful. They contain much of value on the civilian surgery of trauma as well as on preventive medicine. Finally, if the day of disaster should come, by natural forces or enemy action, the value of these volumes will be tragically enhanced if their contents have previously been learned, marked, and inwardly digested.



# The Vanishing Medic—An Evaluation

By

LIEUTENANT COLONEL SAMUEL McCLATCHIE, MC, U. S. Army\*

**M**ANY years ago, in the desolate wastes of the Southwest, a small band of soldiers was cut off in a surprise attack by Apache raiders. Under the savage onslaught their officers fell, one by one. Finally a young medical officer was left. He took command and, under his determined leadership, the soldiers fought off the Indians and survived. He was awarded the Congressional Medal of Honor.

In Korea during the precipitate retreat which our newspapers called "a strategic withdrawal before advancing hordes of Chinese Communists", a Battalion Medical Platoon was apparently forgotten by its parent units, both medical and infantry. Realizing that they had been left behind and were now in enemy territory, the sergeant organized his men and, travelling in the dark by minor trails and little known roads which he had reconnoitered on the triumphant advance to the Yalu, led them to safety, finally catching up with the Medical Company a hundred miles away. Where was the Medical Officer who, in theory, commanded the platoon? To put it bluntly, he just went along for the ride. He was a new recruit, fresh from a residency, city born and bred, unable to think beyond the walls of the hospital where he had been trained and incapable of taking care,

even of himself, in the field. The Sergeant was awarded a battlefield commission to Second Lieutenant.

A hundred years in time and a millennium in thought separates these two incidents. The civilization from which they both came is the civilization which spawned us all, born in battle, hardened by exploration and pioneering, and finally softened by the bewildering complexities of the Age of Machinery.

There is no essential difference between those two physicians. Given equal opportunity they would probably have developed equally. No one can say that basically one was more courageous than the other. But one had lived in his harsh environment and had been tempered by it. The other was squashed like a soft pat of butter in the vice of war, a war he never expected, a war for which his whole background and experience had left him unprepared. Bewildered and bedeviled by the crudity, the awful brutality of life in combat, unable to find anywhere in his past experience a comparable situation, he turned over his command, very wisely, to a man who had lived through World War II, and meekly followed him to safety.

These are extreme cases, you will say. There are many examples of heroism, of adjustment to similar situations, even of inspired leadership in the Medical Corps, that came out of the Korean Conflict. That is true, but the basic lesson remains. We cannot hope to weld a chain to hold back the Communist menace if the individual links are too soft. The strongest hearts and finest spirits in the world cannot achieve victory if the muscles and sinews of their legs will not carry them onward. The most determined individual cannot find his destination unaided if he cannot read a map or cross a river without benefit of bridges.

In the days of the Indian Wars a medical officer was expected to be a soldier as well as a doctor. Today we are hearing it empha-

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sized by Senior Officers of the Medical Corps<sup>1</sup> that we are doctors first and soldiers second. But is this necessarily so? Let us examine for a moment the validity of this assertion; let us go back to basic principles.

There is no doubt in anyone's mind that, if there were no wars, there would be no need for armies and therefore no need for a Medical Corps. In peacetime there is no war, although we now have the queer anomaly called a "Cold War." The Army in peacetime is largely a framework, a basis if you like, for the tremendous forces we might require in a global conflict. The essential part of the Medical Service in such an organization is the part that plans and prepares for war and that provides leadership for the thousands of inductees from civilian life who will be required to take care of the soldiers. This part, then, is not concerned so much with ordinary medical practice as it is with organization and training for battle, and in that respect it is no different to any other branch of military service.

What about medical care of the serving soldier and his dependents? Most of the basic medical care being done today is done by civilian physicians in service for their two years of compulsory duty, or by those in the Residency program. None of these is doing any task which could not be done equally well by any other civilian physician with comparable training. They are not Medical Officers in the true sense of the word. They fit into the organization like eggs in a container but are not part of it. And they drop out of the container at the end of their usefulness, to be replaced by others just like them. Furthermore, in the last analysis, care of dependents is not essential to winning a war. The Army leaves its loved ones behind in battle and civilian doctors handle the job. It does not require military training for this. So it would seem, at least to me, that a Medical Officer in the truly military sense of the word is not a doctor first and a soldier second. He cannot be a Medical Officer unless he is a soldier. He cannot do anything more than a civilian to

further the success of our arms unless he understands the military organization and way of life.

If we do not get into a generalized war it may be said that my ideas do not apply, that the existing organization must suffice and here medical skill is absolutely essential. Again I agree, but even more necessary is the skill of the soldier. What man among us who has not had intensive military training would be prepared to command a medical unit in one of the new Pentomic Divisions—even if it went into action in trucks rather than by parachute drop, airlanding or beach assault? Such a command will require even more military judgement than ever before. Of course we could get out of it by leaving such mundane details to the Medical Service Corps (MSC) officers and abdicating from our proper command function at the same time, which brings me to the title of this article—"The Vanishing Medic."

As a result of World War II the Medical Service Corps had expanded to the point where numerous duties previously performed by Medical officers were performed entirely or in part by the MSC officer. This has been hailed almost universally as a liberation of the doctor from the supposedly onerous duties of administration, leaving him free to confine himself to clinical work. It has freed him certainly, but to the point of schizophrenia of the Medical Service, which today is composed of two separate groups of individuals, Medical Corps and Medical Service Corps, most of whom are incapable of assuming the duties of the other. The MSC of course cannot be expected to know all about medicine, but how can we doctors continue to command when we know nothing about the units we are supposed to lead? The situation today, in the realistically minded divisions of army, is such that command is almost exclusively in the hands of MSC officers, who lead the young doctors to thier examining rooms and say, "Here's where you work Doc—we'll tell you what to do when you aren't seeing patients." Now this is just fine for those doctors who abhor administration.



(They'll come to a rude awakening when they get into their own practices later on and see the mess of paper work there.) But in four or five years from now—what then! Practically all the MSC's with combat experience, or other extensive military experience, are reservists due to be retired (or RIF'd) in the next five years or so. What do we have to replace them? Today almost half the Medical Service Corps is composed of lieutenants, most of whom are two year men whose enthusiasm for further service is only equalled by that of the average doctor. When the old-timers go, it will be a competition between MSC and MC as to who knows the least about the job—and what sort of a Medical Service will that be?

There was a time when a good First Sergeant could take both of them by the hand and the unit would get along. Where is he today? That's a question I won't even attempt to discuss.

In a desperate attempt to infuse some life into the Medical Corps, the Residency Program was started and is proving very successful. A young man may take an internship and four years Residency and then pay back another four years—but in his specialty! It's true he takes a course at the Army Medical Service School (AMSS) somewhere along the line but such training, unless intensified by practice, is soon forgotten. Many of them get out when they have paid back their time, since they are still young and active enough to make an excellent living on the outside, so that for practical purposes they have spent nine years in the Army doing only what any civilian draftee could do. The others, well, you should hear their cries of anguish when they are torn from their beloved specialty and made to do a field job such as Division Surgeon! It's a waste of talent, they cry—and they are right. It's also a waste to the service in a job poorly understood and therefore not well done. Pity the poor Division Commander who will have to use such men, especially when all the old MSC's have gone home!

Now this is a serious situation and calls for heroic measures. To the enduring credit of those who lead us, heroic measures have

been taken but are they sufficient? The Residency program trains specialists. It does not train Medical Officers. Medicine Service Corps procurement has hit on evil days and the problem, to me at least, seems almost insurmountable. Extra pay for doctors, a raise for everyone, better medical care, etc., have all been tried. It seems that there is simply an abiding dislike of military life on the part of our American people today and, without the stimulus of war, there is no easy solution.

An old military adage is that if your attack fails you should hold and re-evaluate the situation before continuing to attack. A new direction seems indicated. If my basic premise is accepted, i.e. that what we need in the Medical Service today is not doctors in uniform but Medical Officers, I believe the following somewhat Spartan advice may be of help.

No residency should be offered to anyone who has not completed his obligatory two years of service, or its equivalent. That two years should be in field units. If a young man likes the service well enough after such an apprenticeship to sign up for a residency, we can have reasonable hopes he will stay. We can also be reasonably sure that, in a war, he could perform capably as a regimental or division surgeon, or wherever else he might be required.

The Medical Corps must return to doing more command and administration at all levels. This would insure that, as good MSC's become scarce, the Medical officer would at least have a basic understanding of the procedures required to run his unit. He could learn as he goes along. In other armies the doctor is expected to run his unit with the help of other doctors and very few MSC's. Their Medical Services seem to function reasonably well, as I can attest from personal experience.

Training of all components of the Medical Service must be fortified. The six months course for Regular Officers at AMSS, with very little time in the field, does not constitute, in my opinion, the proper background for fighting a war. Shorn of all window

dressing and toughened both in its physical and mental aspects, such training will produce MC's and MSC's on whom we can depend.

Undoubtedly someone will say that, if this program were adopted, even those young men of the type we have already attracted will be discouraged, and that the number of career officers will sink to an all time low. I say what of it? As I have tried to show above, those who cannot stand the rigors of the field, or the extra duties of administration, are but civilians in uniform. They serve no more useful purpose than the draftees do and are motivated only by what they can get out of the service rather than what they can do to help their country in these troubled times.

Better to have a small hard core of real fighting men who love the service than a motley crowd of disgruntled individuals counting the days until they can get out. Leaders are not found among the latter group and leaders are what we must have if we are to survive.

There probably are other ideas which might work better than those I have propounded. One thing is sure—unless we do something, and do it soon, the old-fashioned "medic" will vanish, to be replaced by the civilian in a fancy uniform. When that day comes, I hope there will be no more wars.

#### REFERENCES

- <sup>1</sup> Koontz, Amos R.: Professional Excellence—The Criterion of Military Medicine, *MILITARY MEDICINE*, 122:1, Jan. 1958.

THE CIVILIAN EMPLOYEES HEALTH SERVICE of the Department of Defense had six persons\* honored recently in recognition of their service. This unit provides on-the-job medical service to civilians of the Department of Defense in Washington, D.C.



U. S. Army Photo

(L to R) Lt. Col. H. A. Tarbox, Exec. Officer to Director, CEHS and Surgeon, MDW; C. E. Hiltz, Admin. Officer, CEHS; Genevieve Herrel, R.N.\*; Virginia Blagman, R.N.\*; Col. C. L. Milburn, Dir. CEHS and MDW Surg.; Helen P. Anderson, R.N.\*; Col. Walter J. Tkach, Ass't. Physician, White House; Anne L. Lee, R.N.\*; Doris T. Specht, R.N.\*; Marguerite A. Kelley, admin. office, CEHS; Julius F. Evans,\* admin. office, CEHS.

# The Challenge of Man's Entry into Space

By

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**A**STRONAUTICS presents a new challenge to the military surgeon. The application of established knowledge and investigation of new parameters in human psychophysiological stress offers a field for much imaginative labor. The immensity of this new problem is without precedent. Isolated in an entirely new physical world fraught with life-endangering potentials over which he has little control, the astronaut will have much to think of and little to do.

Why then man in space? This is the question debated by the biological and physical scientists. There are several answers. To those of unusual vision, the tale of man's first satellites returning slowly to earth is awakening proof of our world's eventual fiery return to the sun. Eons of time away; yes, but escape for posterity depends on this time for planning. Even without such eventuality man is already feeling the effects of crowding and a need once again for expansion. More acute is the engineer's desire to integrate man into the machine that explores space. Recall, if you will, the flight of a plane on *automatic pilot* when it was very smooth, and how it became somewhat bumpy when the human pilot took over. For this and similar reasons the general public, and indeed many of the physical scientists discount man as the perfect machine. The engineer has taken occasion to refer to man as a "noisy servo." "Servo" is an element of a complex machine which, upon receiving an appropriate signal, performs a specific job. "Noisy" refers to an element which, creating

interference or static, confuses the total machine's operation. Balanced against this view is the growing complexity of the machines that traverse space. Despite man's noisy characteristics, he is a servo of infinite application. The physical scientist interested in extending the usefulness of his space machine, or, in his words, to add sophistication to the machine, needs a *repairer*, a *corrector* and an *interpreter* of higher order than he can produce.

There is much time before we are spectators at the last stages of the world's death. What the more immediate benefits to mankind from space exploration will be, no one can say. The benefit of any of man's former explorations and travels could not be foretold; yet in each venture the benefits were so enormous as to be unbelievable to the people of that time. To us, of course, Christopher Columbus' expedition to this rich and productive hemisphere in 1492 is the prime example. By analogy, there is no reason to believe man's first voyage into outer space will be any less rewarding. One of the most argued points connected with space travel is the habitability and suitability of other planets and satellites of this and other solar systems for "life" both as we know it and as it might arise under other circumstances. No answer, no matter how intellectually predicated, can be given credence until manned space flight is a thing of established fact. It might be kept in mind also that nowhere in history is man's early explorations without military significance, little regarding the motive of the explorer.

*Space travel* should properly be thought of as divided into two phases. Rocket travel, wherein man uses a new mode of transportation for terrestrial travel, and is subjected to the "space equivalent" conditions of the "aeropause."<sup>1,2</sup> The second phase being orbital, lunar, interplanetary missions and be-

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The opinions expressed are those of the author and do not necessarily reflect those of The Surgeon General of the Army, The Department of the Army, or the Department of Defense.

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yond. The first phase is of imminent reality.

For the physical scientist, precise in his disciplines, space starts about 600 miles above the earth's crust. For the astrobiologist, some details of space begin about 10 miles altitude and is almost complete at 120 miles. Thus we have a *partial space equivalence* from 10 miles to 120 miles, and a total *space equivalence* for man from 120 to 600 miles.

Experimental test animals have been sent far into the aeropause and returned safe and unharmed. Man has not yet penetrated this area much above 20 miles. However, neither animal nor man has been subjected to this environment without protection in the form of characteristics of *earthbound existence*.

Unfortunately, we cannot give him all of the terrestrial characteristics, nor even duplicate these changed conditions in the laboratory on the ground. Insofar as engineering skill will permit, a small earth totally unlike the void of space surrounding it, must be created for the space traveler to live in. This is a necessity in our present state of knowledge.

There are then three types of information that must be sought. The first area of information is knowledge and training from our earthbound laboratories that can be directed towards implementation of space projects. These include tolerances of usefulness to noise, vibration,  $\text{CO}_2$ ,  $\text{O}_2$ , increased  $g$  forces, heat regulation, etc. There are, however, many who now feel that tolerance limits should not be given the designer, but that optimal conditions as we know them should be the designer's goal.

The second is information that can only be gained in space—the space laboratory. These are: weightlessness over considerable periods; heat and light changes, radiation from nuclei heavier than can be produced with our present reactors; and perhaps the “break through” phenomenon.

The last area of information to be pursued is in basic research. For the present we must assume that the conditions of our present terrestrial life are the optimal conditions for living. But what really do we know that leads

us to believe that life as we see it, developed because of our ecology; we could equally believe that this *life* developed despite its surrounding environment. Certain information has been developed that metabolic systems of primordial life may have resisted oxygen interference.<sup>8</sup> It has been shown, theoretically, possible to maintain metabolic processes without resort to our respiratory system for oxygen requirements.

From this, we can see that complete answers cannot be given prior to the first venture into space. Therefore, we must provide the first astronauts with comfort, some awareness of their terrestrial life, some feeling of accomplishment and most particularly with the reality of the valuable relationship they carry to their fellow men. They must be imbued with the certainty of return to the normal behavior of terrestrial life with its many blessings.

Information from our laboratories and extensive use of airplanes and submarines easily crystallizes into data for a Life Support System. For altitudes in excess of 70,000 feet, this system must be a self-sustaining environmental cabin, capable of producing the conditions in which man is most efficient. Terrestrial atmosphere is relatively uniform, providing a 21% oxygen mixture at a pressure of 14.7 lbs. per square inch. From this man is provided with 22 cubic feet or two pounds of oxygen a day; to the atmosphere man returns about 18.6 cu. ft. or 2.2 lbs. of carbon dioxide. The normal composition of air contains 0.04%  $\text{CO}_2$  and man tolerates poorly excesses of 2.0% over prolonged periods. For the designer of a space ship, it is well to know that a man acclimates easily to 10,000 feet of altitude or 10.1 pounds per square inch with the same atmospheric composition; but that he becomes hypoxic and loses his usefulness rapidly at 38,000 feet or 3 p.s.i.

In the circumstances of space flight, body heat regulation will be solely dependent on the evaporative processes of perspiration. The “normal” atmosphere contains about 6.0% water vapor. A man producing two pounds of sweat and vapor in expired air

causes the problems of atmosphere and heat exchange to play a major role in design.

Stored oxygen, CO<sub>2</sub> absorbents such as lithium hydroxide and baralyme, and solid insoluble dessicants for humidity control will be utilized in the first ventures into space. Condensation methods become difficult under weightless states.

Urine, feces and other wastes will be stored on the first, shorter flights. Later wastes will be changed into usable products. Showing the earliest promise is the re-use of human urine.<sup>4</sup> Later a *closed ecology* utilizing the concept of our terrestrial balance of plant, light and animal may be feasible. In such a system light and plants use the CO<sub>2</sub>, urine and feces to produce food, oxygen, and provide some humidity control. This system is presently under study at several laboratories utilizing algae. Other factors necessary to the design but not dependent upon space, are noise and vibration tolerances, and internal lighting and ambient heat regulation. Speed in itself has no effect on protoplasmic bodies, but rate of change, acceleration and deceleration, cause prompt physiological embarrassment. In everyday life, man is subjected to a constant acceleration of one *g* or the effect of gravity. A force of several *g*'s are necessary to bring a vehicle to velocity capable of earth orbit or space travel. One has only to realize that a 150 pound man at 1 *g* weighs 600 pounds at 4 *g*'s to gain an idea of the physiological upheaval of such force. Tolerance to increased *g* is dependent on many factors. In experimental animals, mass, body configuration and phylogenetic scale are important. A small fish will stand several thousand *g*'s, while larger experimental animals are killed by short exposure to 50 *g*'s. Time, position, protection and other physical factors make great differences in acceptable limits. Man under the most favorable of circumstances has withstood 21 *g*'s for appreciable periods of less than one minute's duration and can stand much more for milli-second periods.

In sharp contrast are the problems confronting man as a result of space. The weightless or *zero g* state in free space flight

will undoubtedly create severe psychophysiological disturbances. While it is true that the force of gravity decreases with the inverse square of the distance from the earth's center, the circumstances of a vehicle in flight is quite different. Zero gravity can be produced at any height where the force of inertia counterbalances the gravitational pull of earth. This is the case of an orbital or space vehicle. Experiencing an existence of no up, no down will tax the senses of orientation to the utmost. Man's experience in this condition has been for short exposures. Experimental animals have been subjected to zero *g* for somewhat longer periods.<sup>5</sup> The longest period has been the dog, Laika, in Sputnik II. So far no untoward effects of serious degree have been reported. It should be noted that responses to be feared for man might not be observable in lower animals, and the animal was not returned to earth for definitive study. The disturbing effect of once heavy objects hanging in mid-air, moved by the slightest force; the lack of convection as a mode of heat exchange; the inability to pour liquids or drop objects will complicate behavioral patterns. It has been calculated that a man expends more energy combating gravity than in all other activities. May not the weightless state be physiologically beneficial? Certain investigators believe so. Evidence in balanced bouyancy tests in a liquid surrounding, free of sensory stimuli, indicates that a period of two to four hours is the subjective equivalent of eight hours of deep sleep; indeed so restful that it was poorly tolerated for twelve hours. Other investigators see no physiological benefit to be gained from *zero g*. Much of the regulatory schemata of the cardiovascular system is gravity-dependent. Hypo-tension, decreased pulse velocity and possibly right heart failure appear the most likely over prolonged periods. It has been known for many years that inert objects pass through the gastro-intestinal tract in time inversely proportional to their density. Reasoning indicates that digestion would be impeded, but also cellular metabolism would be lowered. In one of the Air Force studies a diminution or total absence of urgency was



noted in subjects with a distended bladder during *zero g*.

Our present satellites are now rotating around their own short axis like a bullet, and end over end like a propeller on their long axis. Investigations are being performed with man subjected to rotation in two and three planes. Although figure skaters easily orient themselves to revolutions of 100 per minute, this is with the center of rotation in line with the center of the body. Man is usually uncomfortable to revolutions above four per minute when he is not centered. If man does not adjust comfortably to *zero g*, a low order of rotation could provide a centrifugal force substitute for gravity. Such a scheme envisions man living and working at the periphery of rotation necessary to give the force of  $\frac{1}{2} g$ . Although this would not duplicate the conditions of gravity, orientation and physiological disturbances would be minimized.

Several forms of highly energized matter streak through outer space. The earth's atmosphere acts as an effective filter against most of these potentially hazardous rays. Large amounts of burning ultraviolet are filtered from the solar radiation by a dense belt of ozone at an altitude of 140,000 feet. These and an abundance of *soft X-rays* from solar activity are easily shielded.

Cosmic radiation has undergone several definitions. Until recently it was believed that the *Milky Way* with its changing electromagnetic fields acted like a huge reactor pump, producing the cosmic rays that reach earth's atmosphere. Now increased activity has been shown during solar flares.<sup>6</sup> Of particular interest among the cosmic radiations are the heavy nuclei. Although constituting only a small fraction of the total number of space particles, they produce the majority of radiological events in the total radiation arriving at earth's atmosphere. The heavy primaries of cosmic radiation have a fixed ratio consisting of 79% protons or hydrogen nuclei, 20% helium nuclei and 1% the nuclei of heavier elements.<sup>7</sup> Of these heavy primaries, about half penetrate down to 12.5 miles; their lower limit being 12 miles. De-

spite their small number they constitute a hazard because they deliver an exceedingly high dose of radiation, localized to an area corresponding to a 4-5 cell thickness. Were this their only effect they could be disregarded. Secondary ionization along the course of their burn-out in tissue produces more profound effects including disruption of enzymatic activity.

The conception of a radiation belt about the earth has gained impetus from recent satellite and space vehicle reports. Containing all elements of solar and cosmic emissions this belt is believed to extend from 600 miles to an area of 4 or 5 earth radii in altitude; thickest at the equator and diminishing to near absence at the poles. Conversely more radiation enters the earth's atmosphere in the region of the poles. The explanation is that earth's electromagnetic fields *capture* the particles and they rotate around the earth like a satellite because of these fields rather than as an effect of gravity. Were these visible particles, and we on another planet, earth might appear to have a ring similar to that of Saturn. Ordinary shielding in this region will be of little avail. We have only to recall that electrons *shot* at a metal plate in a vacuum produce X-rays; and in this belt are vast swarms of freely energized electrons. Man can *escape* and by-pass this belt using a polar orbit. Also, it has been suggested that this cosmic radiation *debris* collected over the past 40 billion years of earth's life can be *swept* from space. The third possibility is development of an entirely new concept of radiation shielding.

Meteorites travelling at speeds of 12 to 36 miles per second and seen as *falling stars*, are burned up by the friction of our atmosphere or collision with other interstellar bodies. Much more data must be gained on their size and number. Even though recent reports have indicated that their number in space may be tenfold that predicted, collision with one of mass enough to penetrate the hull of a space ship is remote. Protection against such a collision or against explosive decompression made possible by meteoritic puncture must be made. That meteorites oc-

cur in measurable abundance at 500,000 feet has been established.

The excessive heat production of air friction upon exit and reentry of the atmosphere will be necessary knowledge for the astronaut. Temperatures of several thousand degrees may be produced with improper reentry. Nor does departure from the atmosphere solve the problems of temperature. Beyond the border of thermal interaction between vehicle and atmosphere, the shell temperature will depend on exchange of radiation between the sun, earth and cosmos, and the ship. Convection, as pointed out, cannot occur in the vacuum of space. None the less, skillful engineering resulted in our Explorer satellites maintaining an ambient inside temperature of 60° to 80° F and preliminary reports state that the Pioneer stayed within a range of 35° to 40° F.

Illumination on earth's surface is dependent upon atmospheric diffusion of light rays from the sun, the reflected light of the moon and back scattered light of earth reflection. The twinkling of stars is caused by this phenomenon. As one ascends through the atmosphere, the sky becomes darker, until at 400,000 feet the void surrounding the craft assumes the appearance of a midnight black sky punctuated only by the sharply delineated, glaring brilliance of stars and other astral bodies reflecting star light. Provision for diffusion of light as well as a safety feature to avoid the astronaut's accidental direct viewing of stellar bodies will be mandatory.

One facet of this problem that may or may not be space related, is the "break off" or "break through" phenomenon. It has been noted by almost all who have exceeded 80,000 feet, though the exact height for each man is somewhat different. It has been described as a sudden mixture of elation and sorrow, a feeling of remoteness, a detachment from all that is worldly. The seasoned high altitude flyer is less effected than the novice; even as the experienced deep-sea diver is less influenced by "raptures of the deep." The divers problems, too, is an eerie, constant feeling of unreality that has been

found due to nitrogen narcosis. The similarity is so great that one wonders if the "break through" will not be found to be a physical phenomenon.

Having insured the safety of our closed system, other effects of space need be only mentioned. These are the complete anoxia of man at 52,000 feet and the boiling of body fluids at 65,000 (37° C). The propagation of sound waves outside the space ship becomes impossible at 400,000 feet where the molecules of air assume the order of wavelength of sound. Not only is it black and empty, but silent. Many attempts have been made to duplicate such a stimuli-free situation, but will man react in the same manner when he knows that someone is not standing outside ready to extract him at the hint of danger! The haunting uncertainty of his return to earth, isolated in his stimuli-deprived abode may well prove to be the greatest barrier to useful space flight.

Selection and training as in all successful endeavors must be as early as possible, and as complete. Some aspects of the training will resemble medieval torture. The early astronaut must have a high order of intelligence, a broad background of experiences in physical and biological sciences. He must not have an intolerance for any limit established for man. He must be trained to increase his tolerance to CO<sub>2</sub>, acceleration, extremes of auditory and vibration levels, prolonged periods of stimuli deprivation and isolation, reduced activity and emotional restraint. He will need to be trained to silence and yet to monotonic sound. Training to sort out sensory stimuli and depend on one, the visual apparatus, is difficult. Based on a knowledge of the deaf mutes reliance entirely on the eyes in water, it has been advocated by some that the early astronauts submit to destruction of vestibular function. Particularly has this latter suggestion been made where centrifugal force is considered as a substitute for gravity. The Coriolis effect of centrifugation introduces a very undesirable stimulus that would be difficult or impossible to ignore. Different colored walls in training

and flight might be useful in spatial orientation. The aspiring astronaut will be taught to move very slowly and deliberately, and to apply force gingerly. Even his eating and drinking habits will need to be changed to depend on sucking.

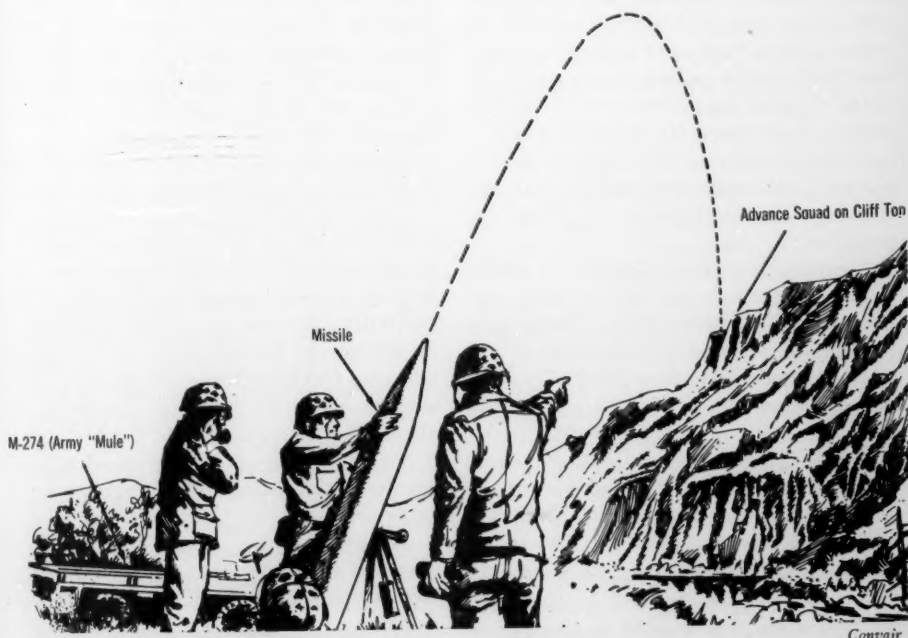
As can be seen from the foregoing account, there is little to preclude man's primary trips through space as a means of travelling several thousand terrestrial miles in a matter of a few minutes. There are, however, areas that can only be conjectured regarding extra-terrestrial travel. This situation of conjecture, or predication, is repeated throughout man's history. Only one very old element awaits consideration, the moment of calculated risk.

The stars beckon and man stands ready,

gazing up towards his greatest adventure—the conquest of space.

#### REFERENCES

- <sup>1</sup> Strughold, Hubertus: *J. Aviation Medicine*, Vol. 23, Aug. 1952.
- <sup>2</sup> Buettner, K. J. K., White, C. S., and Benson, O. O.: *Physics and Medicine of the Upper Atmosphere*, Univ. of New Mexico Press, Albuquerque, 1952.
- <sup>3</sup> Beischer, D. E.: *J. Aviation Medicine*, Vol. 29, No. 7, 1958.
- <sup>4</sup> Hawkins, W. R.: *J. Aviation Medicine*, Vol. 29, No. 7, 1958.
- <sup>5</sup> Gerathewohl, S. J.: *J. Aviation Medicine*, Vol. 25:412-419, 1954.
- <sup>6</sup> Schaefer, H. J.: *J. Aviation Medicine*, Vol. 28: 387-396, Aug. 1957.
- <sup>7</sup> Bradt, H. L. and Peters, B.: *Physiol. Rev.* Vol. 77, 1950.



EMERGENCY SUPPLY TO AN ISOLATED UNIT BY CARGO MISSILE

# Rehabilitation of Tendon Transfers

By

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THERE is an increasing tendency to use tendon transfers in the total rehabilitation of disabled extremities resulting not only from residuals of poliomyelitis but from neuromuscular and traumatic disorders. The results are excellent if certain basic principles, which were evolved during the past fifty years, are followed.

The first tendon transfer operation was attempted in 1881 by Nicoladoni who tried unsuccessfully to transfer the peroneal tendons into the Achilles tendon for a calcaneal deformity resulting from poliomyelitis. In spite of this failure, the procedure of lengthening and transferring tendons was enlarged in Europe. At the turn of the century, these operations were being performed by Hacker, Lange, Vulpius, Codivilla and Eve. In this country, it was Milliken who first reported in 1895 a successful tendon transfer of the extensor hallucis longus for a paralyzed anterior tibial muscle. In the same year, Goldthwait reported a series of successful tendon transfer procedures. In general, however, most such procedures were disappointing in the functional results and gradually these operations were abandoned by American surgeons.

A revived interest was created by Biesalski, a German surgeon, who in 1910 published a book entitled "The Physiological Method of Tendon Transplantation" in which he described improved technical methods and operative procedures which had favorable results on providing functioning transfers. These operative procedures and methods have been modified and improved by Mayer, Jones, Lovett, Steindler, Ober, Bunnell, Eggers, Irvin and others. Because of

the work of these men, certain technics have become standardized and certain basic principles well established for obtaining successful tendon transfers.

## PRINCIPAL INDICATIONS FOR TRANSFERS

The principal indications for tendon transfers are: (1) restoration of active motion and (2) prevention and control of progressive deformities.

*Restoration of Active Motion.* Tendon transfers are used primarily in an attempt to restore active coordinated motion to a disabled segment which has lost this function because of weak or paralyzed muscles, which do not respond satisfactorily to the usual methods of neuro-muscular re-education.

The best results are obtained when there is present in the involved segment only mild dynamic muscular imbalance and no static deformity. The best example of such a procedure is the sublimis transfer for a simple opponens deficiency in the thumb.

*Prevention and Control of Progressive Deformities.* When there is severe muscle imbalance present, a dynamic disability occurs which can not be corrected satisfactorily by any orthotic appliance. In the lower extremity, such an orthosis is able to exert its corrective force only on weight bearing, that is, during the passive phase of the stance when the foot is purchased on the supporting surface. When the foot clears the floor, the strong muscles overcome the weaker synergistic, antagonistic or fixator muscles, causing the disability to increase progressively in its severity.

When this dynamic muscle imbalance is severe, it then becomes an imperative indication for tendon transfer. The aim is to augment the deforming forces by removing or re-distributing the muscle strength evenly around the involved joint or joints. The re-

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sult should be the restoration of muscle balance and normal skeletal alignment. It is obvious that good stability and normal motion should be preserved as much as possible; however, in certain disabilities, this may not be obtainable.

An example of dynamic muscle imbalance is the everted or valgus foot with weak anterior tibial and strong peroneal muscles. If this disability is permitted to persist, it will progress into a serious deformity. It is obvious that every disability, especially of the weight bearing segments of the lower extremities, which is caused by dynamic muscle imbalance, will gradually become associated with a certain amount of static deformity. This combination leads to skeletal malalignment.

*Static disabilities* are caused by changes in ligamentous or supporting tissue and may be due to either tightness from soft tissue contractures or relaxation and elongation of periarticular structures, this resulting in a certain degree of instability. Static disabilities alone may, under the influence of gravity or weight bearing, show deformities causing skeletal malalignment and instability of joints. If either condition shows signs of progression into more serious static deformity, it should be corrected by appropriate procedures which in addition to tendon transfer includes some form of bone stabilization. An example of such a procedure is the subtalar arthrodesis or the Grice stabilization which now is commonly combined with peroneal tendon transfers. The results of this procedure are excellent.

In general, it may be said that deformities caused by dynamic muscle imbalance and static skeletal malalignment may be prevented or corrected by judicious use of tendon transfers alone or in combination with stabilization procedures.

The total rehabilitation of a tendon transfer can be divided into three phases, namely: (1) proper selection and evaluation of cases, (2) adequate surgery, (3) intelligent physiatric re-education.

Each of these phases is important and each must be carried out with meticulous care and

consideration of the total program before a successful transfer of a tendon is obtained.

#### SELECTION AND EVALUATION OF SUITABLE CASES

The tendon transfer operations will be successful only when the cases are properly selected after careful and intelligent evaluation. This estimation must consider the biophysical status, not only of the involved segment and its component parts but also of the more remote parts of the body as they influence the functional performance of the transfer. The following factors are always thoroughly evaluated: (1) Fixed deformities, (2) Residual motor function, (3) Stability of adjacent joints, (4) Functional capacity of the patient, (5) Time for transfer.

*Fixed Deformities.* It is obvious that tendon transfers *per se* will not be strong enough to correct most fixed deformities. These deformities must be corrected before the transfer by appropriate manual or mechanical mobilization, or both. If this can not be obtained by conservative means, then these deformities should be corrected prior to, or at least at the time of the tendon transfer, by one of the several surgical procedures. Fixed deformities caused by tightness or contractures limit the range of motion and interfere with adequate evaluation of the motor function of the muscles. If functional range of motion can not be restored to the joint or joints to be activated by the transfer, then it should not be attempted because it will not be successful.

*Residual Motor Function.* The evaluation of strength is one of the most important procedures and should be performed with meticulous care by a skilled examiner. The muscle strength of the selected tendon to be transferred must be carefully evaluated not only under the best testing positions, but also under functional and adverse conditions. Such an evaluation will indicate the actual functional performance of the muscle. As a general rule, it is wise to calculate that the muscle will lose about one grade of strength when transferred. Therefore, all muscles considered for transfer should be somewhat



better than of good power if they are to provide a functionally active transfer. This rule must be adhered to if the transfer is performed primarily for the purpose of restoring active motion. A muscle of less than good strength may be transferred if it is a cause of dynamic imbalance and progressive deformity or when it is combined with another muscle of inadequate strength to produce one motion.

If there is a choice in the selection of the muscle for transfer, then the one which is physiologically most adaptable should be used. Most muscles can be re-educated so that they can completely reverse to an opposite function. However no muscle can be re-educated to become its own antagonist, that is, a muscle or its tendon should not be split to provide for two opposite functions, as flexion and extension. The brain will be unable to develop adequate movement patterns in such cases to control them successfully. A muscle selected for transfer should be in phase with and have a similar action as the involved muscle to provide successful function. That is, a flexor is best used to replace a flexor muscle. However, there are certain muscles which, in cerebral association, are often active in opposite movements. For example, flexor carpi ulnaris can be used readily for an extensor motor because this muscle normally contracts in forced extension of the fingers against resistance when it acts as a stabilizer of the wrist. Disseminated muscle weakness, producing haphazard functional patterns, is one of the greatest obstacles in evaluating weakness and selecting proper muscles for transfer.

The muscle used for transfer should have structure similar to the involved muscle so as to restore proper relations and ratio between power, speed, endurance and excursion or range of action. Therefore, a long fibered light load long excursion muscle will not replace successfully a short fibered peniform muscle which is built for holding power and steady pull and vice versa. The transferred muscle should have adequate excursion so that it can provide an adequate range of motion to produce functional activities. The

excursion of each muscle is different. Because of this fact, it is seldom advisable to use the same tendon to provide for two activities of two involved muscles. For example, one transfer can not be used to function adequately for the involved long extensor of the thumb and the long abductor because the amplitude of motion of the former is twice greater than the excursion of the latter. One transfer to both muscles would not provide successful function.

The muscle selected for tendon transfer normally should have approximately the same original strength as the muscle it is replacing. As an example, a peroneus muscle can not replace successfully the action of the gastrocnemius. In cases where there is scattered paralysis, like poliomyelitis, it may be necessary to utilize several muscles of different patterns of movement to provide one function.

*Stability of Adjacent Joints.* Persistent unbalanced and unstable adjacent joints are a contraindication to tendon transfer. The stability of the joints depend on the balanced strength of the various muscles acting on these joints. Therefore all the remaining muscles of the segment to which the transfer is to be made should be thoroughly evaluated to determine their stabilization and fixation power, as well as their range and direction of motion. This includes not only the antagonists, but also the synergists and fixator muscles. For example, in the case of a flail hand, it is necessary to determine whether or not there are enough muscle motors available for transfer, and if available, whether they will be sufficient not only to provide the desired action but also able to function with a considerable degree of stability.

When instability or deviation of a joint is present, then an attempt should be made to restore balance by appropriate neuro-muscular re-education and strengthening exercises. If conservative means fail, then surgical stabilization should be performed before the tendon transfer procedure is attempted. This may be in the form of an arthrodesis or a tenodesis.

*Functional Capacity of the Patient.* Again

it is necessary to evaluate the whole patient before a tendon transfer and surgical stabilization, or both, are recommended. Hasty and unwise transfer of a muscle or an arthrodesis of a joint may deprive a patient permanently of an important motion, which may be necessary to accomplish some fundamental activity of daily living. This is particularly true in a severely involved patient where the smallest voluntary movement becomes an important functional asset.

Often a trial stabilization of the joint by a brace or splint will help in the total evaluation and should be used whenever there is the slightest doubt of the value of such a procedure.

In addition to the adjacent joints, the trunk and the other extremities must be assessed before a decision for muscle transfer is made. It is important to know: (1) how the patient is to ambulate, that is, whether on crutches or braces, or whether he is to remain in a wheel chair; (2) whether he has any other associated complications as scoliosis, tight hips, weakness of shoulder and scapular muscles, etc.; and (3) how much endurance he has and other related general medical conditions. When all these factors are evaluated in terms of the patient's needs, and it is reasonable to expect that a transfer will not cause loss of independence that the patient already has, which is the most important determination, and the transfer might help, then it may be attempted.

*Time for Transfer.* When a thorough evaluation shows that the functional pattern is adequately coordinated with or without the use of orthoses then in some neuromuscular disorders like poliomyelitis it is advisable to wait twelve or more months before attempting a transfer of a tendon to increase a specific motion. During this period, the muscles of the involved segment become stabilized in strength and activity with adequate neuromuscular re-education and allow thorough evaluation. Such muscle transfers will be successful and show rapid postoperative rehabilitation.

When, however, muscles start to show persistent faulty functional patterns resulting

from complex substitution, and when such substitution can not be controlled adequately by orthetic supports, then it is necessary to consider muscle transfers much earlier. It is obvious that once a faulty pattern of substitution is well established, it will be hard to alter this by transfer, because such transferred muscles, which usually participated in this substitution pattern, are hard to re-educate. In addition, the functional capability of the patient may now depend on this substitution pattern and when surgery removes one of the active forces or motors, it may interfere seriously with the patient's activity and independence. The transfer also provides a new movement. This further interferes with the substitution movement.

It is obvious then that a thorough evaluation by careful functional testing is necessary to arrive at a decision whether to transfer a muscle to provide a new movement or whether to continue on the substitution complex pattern. If this substitution pattern provides independence and is satisfactory in motion and if the proposed transfer does not appear to greatly increase the functional activity, then it should not be performed. However, transfers should be attempted any time there is dynamic muscle imbalance present which exerts a pernicious force causing a rapidly progressing deformity.

As a general rule, transfers are not attempted in young children. The reasons for this are twofold; namely: (1) Up to about five to seven years of age a child seldom develops fully stable locomotive patterns, therefore, some of the dysfunction and incoordination that may be present on examination may be more apparent than real; and (2) up to about five years of age, the tendons and associated structures are very delicate and small, making the operative procedure technically rather difficult.

#### ADEQUATE SURGERY

This phase is grossly divided into the operative procedure itself and into the immediate post-operative care.

*Operative Procedure.* There are many variations of procedures from which the sur-

geon must select the best one for the given patient. It is obvious that the surgeon who undertakes such a responsibility must possess a thorough knowledge of the biomechanics of the entire segment, and he must have a good understanding of the alteration in alignment and function that this procedure will produce. Above all, he must have full knowledge of the technical skills and requirements to provide a successful transfer, and prevent complications. A transferred muscle is useless if it is not attached at the desired place and not under proper tension. Such muscle will never be satisfactory no matter how much retraining it may receive.

Therefore, the operative procedure should be done carefully and with meticulous care.

*Immediate Post-Operative Care.* This phase of rehabilitation is as important as the operative procedure itself. To appreciate the significance of the post-operative care of a tendon transfer, it is essential to know the healing process that occurs after surgery.

The healing of a tendon suture passes through two stages: the proliferative and the formative.

The first or proliferative stage lasts about two weeks. During the first week, there is fibroblastic proliferation. Because of this infiltration the tendon appears swollen and homogenous in nature. The next week connective tissue starts to appear and form a callus uniting the ends of the tendon. These ends show marked reddening and softening due to increased vascularity.

The second or formative stage starts with the third week when tendon cells become differentiated. There are two types of tendon cells. Those that are on the surface differ markedly from those in the deep layer of the tendon. The surface cells have round nuclei and resemble fibrocartilage cells. The main function of these cells is to provide a smooth gliding surface. The deep layer cells have an elongated nuclei and their primary function is to provide strength to the tendon. By the end of the third week the ends are united quite firmly and show a fair amount of strength.

During the fourth week, there is a dissolution of the inflammatory reaction which is evidenced by decreased vascularity and releasing of the adhesions from the surrounding tissues. The strength across the suture line becomes firm but not equal to normal. However, it is adequate for most activities.

It is evident that tendon transfers require some support, during the healing process, to take place across the suture line. Immobilization is first provided by a cast and is usually followed by splints. Three weeks of a cast is sufficient after simple transfers not associated with any bone procedures. Some surgeons advocate earlier mobilization; however, Mason and Allen who did considerable experimental work on this subject, found that too early function commenced during the proliferative stage tends to be harmful because it causes reactive irritation of the surrounding tissues thus delaying and interfering with the growth of tendon cells and blood vessels to the sutured area. The local blood supply, which is derived most commonly from the paratendon or the tendon sheath, has been disturbed by the operative procedure and must gradually grow into the new area. It is obvious that too early motion will disturb the vascularization and may lead in severe cases, to necrosis of the gliding mechanism or the formation of excessive adhesions. By the end of three weeks, after the first callus has been firmly formed, graded motion causes only slight irritation of surrounding tissues and stimulates increase in the tensile strength of the tendon at the suture line.

After the cast has been removed, the transfer may have to be protected by a splint or brace. This depends on the amount of tension that will be exerted on the transfer. In the lower extremity, it is advisable to use braces for several weeks or longer until there is full functional control of the transfer. When there is lack of adequate stability, bracing of the extremity is also necessary because sudden exertion of active force coupled with the action of gravity may damage the tendon. This also applies to the upper

extremity; however, it is usually not subjected to such sudden changes of force and therefore, splinting does not have to be extensive and should be used only for a short time.

As a general rule, these orthoses are worn during the day and are removed for physical treatment. In some cases, it may be necessary to prescribe the wearing of them at night.

#### PHYSIATRIC RE-EDUCATION

The treatment following the period of immobilization can be divided into the following: (1) application of heat, (2) mobilization, (3) neuromuscular re-education and (4) functional training.

It is obvious that several or all of these methods may be used simultaneously.

*Application of Heat.* If the surgical wound shows some areas that are not entirely healed, then it is advisable to use radiant heat, usually of the luminous type, as a baker. This is applied 20-30 minutes, twice a day.

Paraffin bath is preferred in the early phases of treatment as it provides less irritation to the skin. Moist heat can be used in the form of hot packs or whirlpool baths can be used to advantage and may be combined with active exercises.

All heat applications have a tendency to cause transudate; therefore, they must be followed or be combined with mobilization or exercises. This will decrease the amount of transudate in the interstitial spaces.

*Mobilization.* Mobilization is of major importance in the restoration of the range of motion. After the cast is removed, it is best to encourage the patient to perform active mobilization by himself. Because of pain the degree of motion will, at first, be very small. However the range should be gradually increased to the tolerance of the patient. In the early phase this is the safest way to gain increase in motion without causing injury or overstretching of the tendon transfer. This active mobilization should be continued for one week. Then passive manual mobiliza-

tion is administered by the therapist. It must be remembered that the range should be increased very gradually and performed very slowly so that no trauma occurs at the tendon union. Otherwise, adhesions may develop.

*Neuromuscular Re-Education.* Neuromuscular re-education is usually started four weeks after the transfer, or more precisely, one week after the cast has been removed. By this time, there is a good and strong union which should withstand a certain amount of stress. Neuromuscular re-education may follow or may be combined with heat application or with mobilization.

Neuromuscular re-education of a tendon transfer differs from re-education of other types of traumatic or neuromuscular disabilities by the fact that the transferred muscle must be trained first, to forget its former function and second, to develop a new locomotive pattern. In the other cases, the muscle has only to regain its former coordination and function. Another important factor in re-education of a transfer is the degree of similarity of the muscle used for transfer. That is to say that if a flexor transfer is used for flexor muscle, then the re-education will be accomplished more easily than if an extensor transfer was used for a flexor. Therefore, it is vitally important to know what muscles have been used for transfer, how the transferred tendon is aligned and how and where it is inserted.

Normally every fiber of a muscle is placed and arranged to provide a pull in a certain fixed manner and direction. If the line of pull is changed then every fiber of this muscle has to undergo a re-adjustment to provide the new action. The more this line of action is altered the harder it is to re-educate such a muscle.

The main principle of neuromuscular re-education of a transferred muscle is to establish the desired functional movement patterns. Because of the complexity of such a pattern, it is necessary to divide this training into the following phases: (a) establishing basic isolated contraction patterns, (b) increasing the physical properties of the trans-

ferred muscle, (c) developing complex co-ordinated movement patterns.

*Establishing Basic Isolated Contraction Patterns.* It is obvious that emphasis must be placed on establishing a basic pattern of contraction to obtain the desired movement. This can be accomplished only if the transferred muscle received re-education for isolated co-ordinated contraction. The training must develop correct patterns without substitution or additional aid and is achieved by controlled active movement. The alternate rhythmic contractions of the agonists and antagonists appear to favor the establishment of proprioceptive sense, which helps in developing co-ordination. At this stage strength is of secondary importance and at times it may be detrimental to the formation of good basic patterns. Therefore, the development of strength should not be encouraged. Patients with tendon transfers, in or out of cast, should not be permitted to perform excessive setting-up or isometric contractions, as is often recommended in fractures. These isometric contractions have a tendency to cause abnormal patterns because these contractions and relaxations, occurring without an active motion of the muscles, stimulate simultaneously both the agonists and antagonists, thus causing a confusion in the innervation pathways.

When muscle re-education is started by using assistive active exercises it is necessary to prevent movements which may cause overstretching of the transferred muscle. The range of motion must be gradually and progressively increased. It is obvious that at this stage muscle re-education and mobilization can be combined. Developing maximal muscular tension for obtaining better contraction is contraindicated early in the muscle re-education of a tendon transfer; therefore, concentric movement during which the muscle shortens while it contracts, is preferable.

Muscle re-education should be performed with meticulous care, always using at first the same position and movement so that the patient can achieve a correctly conditioned mental pattern which eventually must be-

come automatic. Therefore, all movements are carried out slowly and repeated indefinitely until coordinated patterns are established. Fatigue must not be allowed to occur at any time. Long rest periods should be provided between repetitions. The periods of re-education should be relatively short but repeated quite frequently.

During this phase of re-education, it is important for the patient to understand the procedure and the movement. The patient, if possible, should be made to concentrate on the new line of pull of the transferred tendon. This part of the re-education is usually difficult in children. If the direction of pull of the transferred muscle and the angle of insertion are simply and clearly defined, then the re-education process is short. However, if there was a complicated surgical procedure, the re-education is much more prolonged.

When the transferred muscle has to perform a motion reversed to one that it normally did, e.g., when a flexor is converted into an extensor, the re-education is then more difficult. It may be necessary at first to have the patient perform the former function in order to innervate the muscle. This, because of the new insertion of the tendon, will produce the new movement. The patient must follow consciously this new movement and must associate it with the former innervation. For example, in the transfer of the peroneus longus, he must try to contract this muscle while attempting to dorsiflex the foot. It is often found that at first, the foot will go into eversion because the patient will not be able to separate the former movement into its component units and a total movement response is obtained. It also must be remembered that this new movement alters the usual arrangement of antagonists because the former antagonists now become agonists in function. With proper positioning of the foot in which all the synergistic muscles are put to disadvantage, the isolated motion will be obtained. This contraction should be encouraged and once well established the foot should be placed in positions permitting



gradual, increased activity of the former synergists. Re-education is continued until the desired new coordinated movement is obtained acting against its former synergists and agonists. The patient should not be permitted to use the transfer in both flexion and extension patterns. During this period, the transferred muscle will develop new synergists; however, great care should be taken not to permit these new synergists to take over the movement. In the example quoted, the long extensor of the toes will have a tendency to become overactive if it is allowed free activity and eventually may take over the function of the transfer, resulting in faulty patterns of motion. This will cause the transfer to remain weak.

As a general rule, a transferred muscle will gain better strength and will be used more advantageously if it does not develop or become associated with strong synergists who assist in the performance of the desired movements. However, the final strength of the segment will be greater if there are good synergists properly coordinated with the function of the transferred muscle. This phase of treatment is continued until the patient gains coordinated movement.

Electromyographic studies on re-coordination of leg movements in poliomyelitis patients with transferred tendons were carried out by Paul Weiss and Paul F. Brown.<sup>1</sup> They used the biceps femoris muscle for transfer to the extensor of the knee to substitute for lost function of a paralyzed quadriceps. They compared the action of the biceps with its preoperative flexor and postoperative extensor function.

The results indicated that there was no activity in the transferred muscle during the early efforts of the patient to move the thigh. Soon, however, either during the first or one of the succeeding sessions, the transfer began to come in, at first in the flexor phase. After only a few trials it suddenly contracted in the extensor phase, also. Visualization of the task to extend the limb seemed to be the prime aid; actual visual control and proprioceptive cues seemed to be less

important during the early phase of recovery. The transfer appeared to continue for some time to respond in both flexor and extensor phases and there appeared to be no evidence of automatic resumption of reciprocal innervation. Association of the biceps with the extensors did not by itself produce dissociation from the flexors. Only after a further practice period of individually varying duration, did the transfer assist the flexor action.

Even then, however, temporary relapses into old flexor association can occur repeatedly, even years after the operation. These relapses seem to be favored by fatigue, lack of concentration and automaticity of movement. Their occurrence supports the view that the adjusted use of the transfer is not based on the substitution of a permanent extensor association for its former association in the elementary motor mechanism, but rather on the development in higher centers of a new type of action which can effectively override the innate coordination between lower rigid, and higher plastic systems in the control of coordination.

There are several other facts still needing explanation—such as the fate of stretch reflexes; action of motor units, differential fatigue, etc.

*Increasing the Physical Properties of the Transferred Muscle.* Once coordinated movement is established, the neuromuscular re-education is directed toward increasing the power and endurance of the transferred muscle to establish a balance of force. This balance of strength is necessary to obtain the best functional results from the transfer. However, this is often hard or impossible to achieve. When the transferred muscle is able to perform an active movement and hold that position, progressive resistance is then gradually applied. This resistance is graded in such a way that only the desired movement is accomplished without any accessory assistance from synergists. If too much resistance is applied, substitute movement develops.

Once adequate power is developed in the transferred muscle in accomplishing the new

movement, then speed in performance is developed which is necessary to provide normal functional activities.

*Developing Complex Coordinated Movement Patterns.* Developing complex movement patterns may be started as soon as there is sufficient strength and endurance to accomplish the desired activity in a coordinated manner. At first, this training should be performed with gravity and weight eliminated as much as possible and should be carefully graduated by being progressively increased. This not only develops complex coordinated movement patterns, but also increases strength and endurance.

*Functional Training.* The functional training of a transfer in the lower extremity is a matter of regaining strength, coordination and speed. It is essentially directed to the regaining of proper functional locomotive patterns and is accomplished by gait training, stair climbing, transferring and other similar activities.

The functional training of a transfer in the upper extremity is much more complicated and may require considerable effort. The first essential of this training is to regain the essential usage of hands and upper extremities for performance of the basic self-care activities of daily living with the remaining capabilities and with minimal expenditure of energy. Once this phase of treatment is mastered satisfactorily, the patient may proceed to the next phase, which is pre-vocational exploration. During this phase, the patient is evaluated for his basic

motor work-skills.

Basically these two phases have activities which are performed in divergent directions; the activities of self-care mostly require the ability to bring the bodily segments toward the body, while vocational activities require the bodily segments to extend from the body.

Both phases of functional training should be used because only in this way will the maximal performance of the segment be obtained.

#### SUMMARY

Rehabilitation of tendon transfers will be successful only when:

(1) The cases are properly selected after careful and intelligent evaluation of their fixed deformities, residual motor function, stability of adjacent joints and functional capacity of the patient.

(2) Adequate surgery and sound, immediate post-operative care was given and,

(3) Intelligent physiatric re-education has been carried out to provide optimal and maximal mobilization and neuromuscular re-education to establish basic isolated contraction patterns, increase strength and develop complex co-ordinated movement patterns leading to the development of functional activities.

#### REFERENCES

- <sup>1</sup> Weiss, Paul, and Brown, Paul F.: Electromyographic studies on recoordination of leg movements in poliomyelitis patients with transferred tendons. *Proc. Soc. Exper. Biol. & Med.*, 48:284, 1941.



# Chemical Disinfection in the Operating Room\*

By

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CHEMICAL disinfection is the practice of rendering inanimate materials safe for use by exposing them to liquid or gaseous chemicals that have antimicrobial activity. A broader definition of chemical disinfection includes skin antisepsis which is the attempt to reduce the population of the skin by application of a chemical solution. In this discussion I shall limit myself to operating room procedures.

The subject of chemical disinfection is a confusing one, and it will remain so until the ideal germicide is developed: i.e., a single all-purpose chemical. Despite commercial implications—and occasional frank claims—that such a product is already available, this is not so. Indeed, efforts to convince you that an ideal proprietary product is at hand are ill-advised for reasons I hope will become evident from my subsequent remarks. Furthermore, a major factor contributing to the complexity of chemical disinfection is the increasingly efficient means of advertising and promoting commercial products, some of which are purported to be superior to all others in one way or another. Although the principle of free competitive business is in the best American tradition, the actual practice of it poses problems for the Operating Room (OR) administrator who in most instances has to decide which products are best suited to her specific needs. The primary purpose of this talk, therefore, is to explain some of the principles of chemical disinfection and apply them to Operating Room practice.

## PRINCIPLES

The first principle is that strong chemicals

kill microorganisms the same way heat does, i.e., by coagulating the protein in them. Furthermore, strong chemicals, like intense heat, bring about this destruction very rapidly, sometimes within a few seconds. Because most OR disinfection procedures require rapid action, it follows that chemicals should be used in as strong a concentration as possible.

But microorganisms may also be killed by weaker concentrations of chemicals in slower and more subtle ways; e.g., blocking of essential enzymes, a process that eventually starves them to death provided the chemical remains in contact with them. This mechanism is involved in skin antisepsis with hexachlorophene soap and the disinfection of endoscopes with mercurial solutions. In this discussion, however, I shall be concerned primarily with the rapid disinfection of inanimate materials.

The second principle I want to consider is that the inherent capacity of antimicrobial chemicals to damage materials with which they come in contact severely limits the maximum usable concentration. This principle becomes meaningful when we pose this question: How soon can our instrument, surface or object be made safe to use (disinfected) without injuring it? Let us consider the latter part of this question first, i.e., damage to the material being disinfected. Concentrated HCl will rapidly destroy all germ life, but it is useless as a disinfectant because it also damages the materials. Strong formalin solutions are active germicides that do not damage inanimate objects, but they have no application in the surgical scrub or skin preparation procedures because they are too toxic. If we accept as a corollary of this principle the statement that the concentration of chemical we select must not injure the objects or material to be disinfected, we now turn to the main part of our question which is: How soon can disinfection occur?

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This brings us to the third and most important principle, namely that the time needed for complete disinfection—commonly called *disinfection time*—depends upon three factors: (1) the nature of the object being disinfected; (2) the nature of the contamination; (3) the antimicrobial effectiveness of the chemical. The importance of the first factor is apparent. The easiest surface or instrument to disinfect is a flat metal one. Porous surfaces, on the other hand, require good penetration by the chemical, and hinged instruments must have thorough prior cleansing. If the hinges of an instrument are clogged with blood and pieces of tissue when placed in contact with a disinfectant, the chemical combines with these body proteins and coagulates them to form a mechanical barrier to penetration. At the same time the effective concentration of the germicide solution is correspondingly reduced. It is essential, therefore, that materials be adequately cleansed before exposure to the disinfectant.

The second factor that affects disinfection time is the nature of the contamination. I mean by this both the nature and number of micro-organisms that are present. The more important of these is the nature. For purposes of chemical disinfection, bacteria can be arranged into three classes with increasing resistance in the order given: (1) non-sporulating, vegetative bacteria such as staphylococcus, streptococcus and *E. coli*; (2) the tubercle bacillus; and (3) spores. The difference between (1) and (2) is not great but that between (1) and (3) is enormous. For example, the vegetative form of the tetanus bacillus is destroyed within a few seconds by a chemical solution that fails to kill tetanus spores in days or even weeks of exposure. Thus, it becomes important to know what is included in the word "disinfectant."

This term has not always meant the same thing. As our knowledge accumulated and our standards were raised, the word "disinfectant" acquired different meanings. To illustrate this point let me pose a three-part question. When you set out to disinfect an

instrument with chemicals, do you intend to kill only vegetative bacteria? Or vegetative bacteria plus tubercle bacillus? Or these two plus all spores? Until a few years ago a disinfectant by general acceptance needed only to kill vegetative bacteria. In more recent years, however, the requirement of tuberculocidal action has been added, and rightly so, because disinfectants are available which have this capacity. But very few chemicals or combinations of chemicals can kill spores in a practicable length of time. Therefore, disinfection does not include the destruction of spores. Indeed, the exceptional chemical, either liquid or gaseous, with this power should be called a sporicide, and it may be used with the expectation of obtaining sterility.

So far, I have been discussing bacteria. What about fungi, animal parasites and viruses? The vegetative forms of yeasts and molds are readily susceptible to destruction by chemicals. A fact not adequately appreciated, however, is that the chlamydispores produced by many fungi are as resistant as some bacterial spores. *Candida albicans*, causing moniliasis, is such a fungus, and the extent to which outbreaks of this infection in hospital nurseries may arise from the use of weak disinfectant solutions is a worthwhile—but largely ignored—subject for investigation. Animal parasites like protozoa and worm ova are consistently susceptible, but the virus situation is more complicated.

Until recently virus research contributed little to disinfection problems, but with the development of viral tissue culture methods, it became apparent that viruses vary considerably in their resistance to chemicals, although there is no indication that the resistance level ever approaches that of spores. Some viruses, such as those of influenza, seem to be as delicate as streptococci; others are more resistant but still not very difficult to destroy, e.g., the polioviruses; and in a very different category are the hepatitis viruses which are significantly more resistant than other known viruses. My remarks about

virus disinfection are based upon studies made by my colleague, Dr. Morton Klein.

I wish to emphasize the fact, however, that we do not know how resistant the hepatitis viruses are. This is because man is the only susceptible host. Consequently, it is impossible to grow these viruses in experimental animals where they can be studied. The declaration that "no known chemical kills hepatitis virus" has appeared in the literature several times. This unjustified assertion should be replaced by one which recognizes the fact that no method is available to study chemical destruction of these viruses.

We can sum up this part of the subject by answering the following question: What should we expect a disinfecting solution to do? My answer is that I expect it to destroy within 10 minutes all vegetative bacteria, tubercle bacilli, fungi, animal parasites and all viruses except the hepatitis viruses which may or may not be destroyed. I do not expect it to kill spores.

Because commercial promotion of disinfectants at the present time is oriented toward the killing of staphylococcus, I shall comment upon the chemical resistance of staphylococci. The problem of hospital infections due to antibiotic resistant staphylococci is a major one, and the prospect for the future is frightening. We should, of course, tighten all of our procedures including those involving disinfection. But do not be misled by advertising claims which imply that the resistant staphylococcus in your hospital is "more susceptible" (than what?) to the particular disinfectant being promoted. Dr. K. M. Schreck carried out tests in our laboratory with staphylococci of bacteriophage type 42B/52/81, which seems to be responsible for many hospital outbreaks. His results fail to indicate that this variety is any more resistant to disinfectants than the well known strain #209 which for many years has been the standard test staphylococcus.

A few minutes ago I said that the disinfection time is influenced not only by the nature but also by the number of micro-

organisms that are present. I will illustrate this point by citing two examples from data obtained by Mrs. Ellen K. Emmons and me. When dried bloody scalpel blades carrying *Staphylococcus* #209 were immersed in 1 : 1000 aqueous Zephiran, the following disinfection times were observed:

Blade Count	Disinfection Time
75,000	5 to 10 minutes
12,000,000	more than 45 minutes

A similar test design using *B. subtilis* spores and Bard-Parker Germicide gave the following disinfection times:

Spore Count	Disinfection Time
100,000	2 to 3 hours
1,000	1 to 2 hours
10	less than 30 minutes

These data show that the larger the number of bacteria in the inoculum the longer will be the disinfection time. The reason for this direct correlation lies in the fact that the bacteria composing any population mass are heterogeneous. In other words, they are subject to genetic variation. As the population size increases, there is a corresponding increase in the percentage of relatively resistant mutants which are destroyed only by comparatively long exposures to disinfectant. In this connection I remind you that the best way to make sure your materials do not harbor resistant germs is to cleanse them thoroughly.

We are now ready to consider the third factor which influences disinfection times, namely the effectiveness of the chemical being used. Hundreds of different germicidal chemicals have been made available and some are better than others. From data obtained in our laboratory and elsewhere I shall comment in a general way about the most useful types of germicides, and these comments are offered as background for the recommendations that appear as an addendum to this paper.

*Mercurials.* The commonly used mercurials are the bichloride and cyanide compounds. They are poor germicides and there



is no place for them in modern disinfection.

**Phenolics.** These include Staphene\* and Vesphene (Staphene plus detergent)\* as well as the newer so-called nonodorous solutions Amphyl† and O-syl.‡ In the 1 to 3 percent concentrations recommended as the use dilution they are good germicides for floors, walls, and furniture because of their good bactericidal and virucidal activities. They are fairly active tuberculocides, but they are not sporicides. Heat may be applied to Amphyl and O-syl solutions in order to increase the rate and level of cidal action so that spores can be killed. The manufacturer should be consulted in this matter.

**Chlorines.** Hypochlorites are good disinfectants for floors but not for instruments, which they corrode. The hypochlorous acid derivative known as Chlorpactin 2DC is used as a 1½ per cent aqueous solution called Warexin.\*\* It is supported by tuberculocidal and sporicidal claims that were not entirely confirmed by tests made in our laboratory.

**Iodine.** The germicidal action is good, but its usefulness is limited by the fact that it stains most everything it touches, and it is corrosive. In combination with alcohol 0.5 to 1.0 per cent iodine is a good tuberculocide for disinfection of oral thermometers. Wescodyne,‡ an iodine-detergent combination (iodophor) is an improvement in that it does not stain, and it can kill tubercle bacilli if used in sufficient concentration (450 ppm. of available iodine). It is not a very good sporicide although concentrations as great as 600 ppm. are sporicidal with overnight exposure. It is possible that among the rapidly increasing number of iodine-complex germicides there are some more effective than Wescodyne. Virac,†† an iodine-cationic quaternary complex now being used widely

throughout the country, appears to us to be no better, and possibly less effective, than Wescodyne.

**"Quats."** This is chemical slang for a very large group of quaternary ammonium compounds having soap-like properties. Zephiran is the best known of the "quat" or cationic detergent germicides. The killing action for ordinary vegetative bacteria is very good, but there is no effect on the tubercle bacillus and virucidal activity is limited. On the other hand, aqueous Zephiran has the virtue of being non-irritating in the 1:1000 concentration generally used.

**Alcohols.** The germicidal power of ethyl and isopropyl alcohol is generally underrated. Not only are vegetative bacteria destroyed very rapidly by 70 to 95 per cent concentrations, but so also is the tubercle bacillus. Indeed, alcohol appears to be the tuberculocidal agent of choice, and, when combined with other chemicals, it increases the germicidal effect. It is not sporicidal.

**Formaldehyde.** A strong aqueous solution (8 per cent formaldehyde or 20 per cent formalin) is a very good disinfectant, and it is even a sporicide. When combined with alcohol the action is even greater. Both the tubercle bacillus and viruses (effect on hepatitis viruses is not known) are promptly killed. This combination is the most germicidal solution commonly available.

#### CONCLUDING REMARKS ON LIQUID DISINFECTANTS

I shall conclude by stating my opinion of the role of liquid chemicals in modern disinfection. There has been a tendency in some quarters to be scornful of all chemical solutions, and I do not deny there was reason for it. In contrast to the highly ethical manufacture and sale of heat sterilizers, only a comparatively small capital investment is needed to make and sell a chemical solution. As a result, the whole practice of chemical disinfection has suffered. But to make a categorical condemnation of it is to deny ourselves useful products. Good germicidal solutions are available, and the proper procedure

\* Vestal Laboratories, Inc., St. Louis 10, Mo.

† Lehn and Fink Products Corp., Bloomfield, N.J.

\*\* Guardian Chemical Corp., Long Island City, N.Y.

‡ West Chemical Products, Inc., Long Island City 1, N.Y.

†† Rouson Laboratories, Inc., Portland 2, Oregon.

for selecting them, I think, is to keep in mind that no single one will suffice for all purposes any more than one chemotherapeutic drug suffices for all infectious disease. The list of recommendations appended to this paper is intended to help in making these selections.

#### GAS STERILIZATION

The only gaseous chemical worth discussing at this time is ethylene oxide. This is used commercially to prepare presterilized articles, especially those damaged by heat sterilization. Therefore, it has to kill spores and this is achieved by incorporating physical methods such as alternate vacuum and pressure to promote penetration, and of gentle heat to increase cidal activity. In industry a wide margin of safety is provided by using exposure periods as long as 16 to 20 hours.

Two sterilizers are available for hospital use (American Sterilizer Co., and Wilmot Castle Co.). Our experience is limited to the American Sterilizer's Cryotherm apparatus. Tests made in cooperation with Mildred Guzara, R.N., Supervisor of Operating Rooms, Temple University Medical Center, are the basis for the comments that follow. There is no doubt but that sterility can be obtained and that ethylene oxide is a valuable addition to our disinfection armamentarium. But for maximum usefulness, the exposure times must be within practical limits. Therefore time becomes a critical factor, just as it is with liquid disinfectants. Our findings indicate that exposure times of 4 hours (2 cans of Cry-oxide gas) or 8 hours (one can) should be used.

A small table model of ethylene oxide sterilizer is also available (Ben Venue Laboratories, Bedford, Ohio). It operates without benefit of vacuum, pressure, or heat. Consequently its action is slower than that of the larger and more elaborate Cryotherm apparatus. On the other hand, it is relatively inexpensive, completely mobile, and handy for disinfecting lensed and ophthalmic instruments. On the basis of our own tests, we decided to employ an exposure time of 6 hours.

Ethylene oxide appears to be a special purpose method for articles damaged by heat sterilization or by exposure to liquid germicides. The tubercle bacillus is destroyed promptly, but we do not know, of course, how long it takes ethylene oxide to kill the hepatitis virus. Articles must be wrapped if sterility is to be maintained upon removal from the sterilizer. It may well be the method of choice for sterilizing thermolabile plastics, endoscopes, parts of the heart-lung machine, and doubtless many other materials. A serious limitation to the practicability of the large ethylene oxide sterilizers is their high cost. The greatest area of application for ethylene oxide may be the disinfection (not sterilization) of blankets, pillows, mattresses, and the like.

#### RECOMMENDATIONS FOR CHEMICAL DISINFECTION OF MEDICAL AND SURGICAL MATERIALS<sup>1,2,3</sup>

The proprietary and nonproprietary solutions mentioned below represent only a small fraction of those available, many of which may be entirely satisfactory for certain purposes. I have had the opportunity to work with those which appear here.

Which solution to use and how to use it is influenced more by the types of bacteria to be destroyed than it is by the kind of instrument or object being disinfected. For the purposes of disinfection bacteria fall into three types: (a) ordinary (vegetative) bacteria such as staphylococci; (b) tubercle bacilli; and (c) spores. *Provided prior*

<sup>1</sup>The large number of tests upon which these recommendations are based were carried out by Mrs. Ellen Emmons, Ass't. Instructor in Microbiology.

<sup>2</sup>The evaluation of virucidal activity is based upon tests carried out by Dr. Morton Klein, Dept. of Microbiology, Temple University Medical Center. The opinions expressed here are his.

<sup>3</sup>I wish to acknowledge the valuable assistance of: Mildred L. Guzara, R.N., B.S., Supervisor of Operating Rooms (Temple University Medical Center); and of (Mrs.) Vernita Cantlin, R.N., M.S., Ass't. Director of Nursing Services, Chester County Hospital, West Chester, Pa.

cleansing is thorough, satisfactory disinfection can be obtained as follows:

#### A. VEGETATIVE BACTERIA AND INFLUENZA VIRUSES

1. *General comment*—many germicides fulfill these easy requirements. Some of them are:
  - (a) 70 to 90% isopropyl alcohol;\*
    - (b) formaldehyde-alcohol solutions\* of the Bard-Parker Germicide type;
    - (c) Zephirin, 1:1000 aqueous;\*
      - (d) Wescodyne, 75 ppm. available iodine;\*
        - (e) 2% Amphyl;\*\*
          - (f) 2% Staphene.
  2. *Smooth Hard surfaced objects*—10 minutes' exposure to any of the solutions in A.1. If the objects is metal, add 0.2% sodium nitrite to solutions marked \*, and 0.5% sodium bicarbonate solution marked \*\* to prevent rusting.
  3. *Rubber tubing, "shellac" and "web" catheters*—flush by syringing with solutions (c), (d), (e), or (f) under A.1., and immerse in the same solution for 10 minutes. Follow by a sterile water flush and rinse.
  4. *Polyethylene tubing*—flush by syringing thoroughly with a cleansing solution, and immerse for 10 minutes in one of the following solutions: A.1. (c), (d), (e), or (f). Solution A.1. (a) and (b) are very satisfactory if tubing is clean.
  5. *Lensed instruments*—cleanse and immerse for 10 minutes in one of the solutions mentioned in A.3. See A.2. for comment on rust prevention.
  6. *Hypodermic needles and syringes*—until more is known about the chemical resistance of the hepatitis viruses the only safe method is heat sterilization.
  7. *Hinged instruments*—cleansing must be particularly thorough. Then immerse for 20 minutes in any one of the solutions mentioned in A.1. See A.2.

for comment on rust prevention.

8. *Floors, walls, furniture, etc.*—a disinfectant is no substitute for "elbow grease" and soap and water. The following are good housekeeping disinfectants: 1% Amphyl; Wescodyne, 75 ppm. available iodine; 2% Ves-phene; 1:1000 Roccal (crude Zephiran); 1:500 sodium hypochlorite.

#### B. Organisms in A., plus TUBERCLE BACILLUS AND ENTEROVIRUSES (Polio, Coxsackie and ECHO)

1. *General comment*—the list of acceptable solutions is not long:
  - (a) 70 to 90% isopropyl alcohol;
  - (b) formaldehyde-alcohol solutions of the Bard-Parker type;
  - (c) 2% Amphyl;
  - (d) 2% staphene;
  - (e) strong concentration (450 ppm. available iodine) of Wescodyne.
2. *Smooth, hard surfaced objects*—5 minutes' exposure to B.1 (b); 10 minutes for the other solutions listed in B.1.
3. *Rubber tubing, "shellac" and "web" catheters*—flush by syringing with Wescodyne, 450 ppm. available iodine; 2% Amphyl; or 2% Staphene. Then immerse in same solution for 10 minutes. Rinse and flush thoroughly with sterile water.
4. *Polyethylene tubing*—flush by syringing with the solutions in B.3., then rinse and flush with water. Flush with solutions B.1. (a) or (b) and immerse for 5 minutes.
5. *Lensed instruments*—cleanse with one of the solutions mentioned in A.3., wipe carefully with alcohol sponge and immerse for a few seconds only in 70 to 90% isopropyl alcohol. The last step runs the risk of softening of lens mountings and it should be used only after consultation with manufacturer. Ethylene oxide may be the method of choice.
6. *Hypodermic needles and syringes*—See A.6.

7. *Hinged instruments*—cleansing must be particularly thorough. Then immerse for 20 minutes in one of the solutions under B.1. See A. 2. for comment on rust prevention.
8. *Floors, walls, furniture, etc.*—thorough cleansing with 2% Amphyl, 3% Vespene or Wescodyne (300 ppm. available iodine). Spot disinfection can better be carried out with a strong hypochlorite solution such as Clorox or with an alcohol sponge.

C. Organisms in A. and B., plus SPORES

1. *General comment*—the only solutions that qualify as acceptable sporicides are formalin-alcohol solutions of the Bard-Parker type.
2. *Smooth, hard surfaced objects*—3 hours' exposure to solution mentioned in C.1.
3. *Rubber tubing, "shellac" and "web" catheters*—use ethylene oxide, if possible. Otherwise immerse clean tubing or catheter in 4% aqueous formalin solution for 18 to 24 hours. Dirty tubing should first be syringed with solution B.1. (c), (d) or (e) and then flushed with and immersed in aqueous formalin. Rinse thoroughly with sterile water.
4. *Polyethylene tubing*—same preliminary cleansing as in C.3. Then im-

merse for 3 hours in a solution of the type mentioned in C.1.

5. *Lensed instruments*—use ethylene oxide.
6. *Hypodermic needles and syringes*—see A.6.
7. *Hinged instruments*—cleansing must be particularly thorough. Then immerse in a solution of the type mentioned in C.1. See A.2. for comment on rust prevention.
8. *Floors, walls, furniture, etc.*—liquid disinfectants that kill spores are volatile, and nonvolatile one's lack sporicidal power. Use solutions in A.8. or B.8. but not with the idea of killing spores.

SUPPLEMENTARY RECOMMENDATIONS

Transfer forceps—formaldehyde-alcohol solution of the Bard-Parker type. Change once a week and autoclave the container.

Contaminated cases:

*Instruments*—soak in solution A.1. (d), (e) or (f) for 10 minutes. Cleanse sharps and follow procedure in C.2. Autoclave everything else that can be sterilized this way.

*Furniture, floors, etc.*—see A.8.

*Oral thermometers*—wash with soap and water; wipe dry and store in 70% isopropyl alcohol containing 0.5% iodine.



# Schizophrenic Reactions Among Overseas Marine Corps Troops\*

By

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THE illness of schizophrenia is perhaps less frequently encountered in military service than in civilian life, and is sometimes regarded as a totally disqualifying condition. The military physician certainly does not meet with the illness as frequently as does his civilian colleague nor does he encounter the advanced forms of the illness.<sup>1</sup> Our current concept of the schizophrenic process, however, has broadened to include many patient who are not grossly psychotic<sup>2,3,4</sup>; and it is expected that such patients are to be found in service.

The study of mental illness in the military setting has many technical advantages. The longitudinal record available on the service man is uniquely complete and documented. A patient's life course may be charted in detail from his service record. Similarly the follow-up study of the service man is quite easy compared to the usual problems in outpatient studies. Also, the presence of a standardized environment makes comparative studies more useful.

The present study arises out of the psychiatric problems seen in a body of overseas Marine Corps troops. Being the only psychiatric consultant available for the troops, this observer was in contact with all of the serious psychiatric problems and had complete follow-up on later developments in the group.

It is pertinent to consider the particular population and environment from which the present study arose. The body of troops was composed of volunteers serving in a Far Eastern duty station. In order for a Marine

to be serving overseas, he must have completed basic training and several medical examinations. The overseas tour for these men lasted 14 months. The military environment was rigorous, authoritarian, and physically demanding. The non-military environment was a rural Asiatic setting offering many low-priced physical commodities but quite devoid of intimate emotional satisfactions. The total atmosphere might be regarded as a stressful one although the possibility must always be entertained that such a situation may be quite relieving to some individuals.

## INCIDENCE

The schizophrenic patients described here were observed in a body of approximately 15,000 Marine Corps troops over a period of 12 months. During the 12 months period, a grand total of 300 men were seen in psychiatric consultation and treatment, including both in- and outpatients. The gamut of military psychiatric problems was represented within this group. Of the 300, twenty-eight received schizophrenic diagnoses. Wherever possible, concurrence in the diagnosis was sought through consultation, psychological testing, and subsequent hospitalization records.

In addition 11 patients were labeled Schizoid Personality. This group of 11 patients showed no evidence of psychosis nor did they meet the criteria for a diagnosis of ambulatory<sup>4</sup> or pseudoneurotic schizophrenia<sup>2</sup> in psychological or clinical examination. The picture of several, however, was quite suggestive of a schizophrenic diagnosis; and it is possible that, in time, such a state may reveal itself in these patients.

From the overall view, then, in this setting, schizophrenic disease accounted for about 10% of the referrals, and about two per thousand men in the field.

Opinions expressed herein are those of the author and do not necessarily reflect the views of the Navy Department.

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## CLINICAL FEATURES

The 28 patients may be grossly divided into two clinical groups: (1) the frankly psychotic whose condition demanded hospitalization, eight patients; and (2) the ambulatory who were capable of a stable outside adjustment, 20 patients.

Of the eight frankly psychotic patients, the diagnoses were as follows: paranoid, 4; acute undifferentiated, 3; and catatonic, 1. The group was notably lacking in acute agitated or rapidly deteriorating forms of psychosis.

The ambulatory patients presented a range of clinical forms. At one extreme were relatively stable states with strong neurotic features. At the other extreme were more fragile states in which gross disintegration threatened. The latter forms were often seen at the height of their anxiety, highly disturbed by their own urges and discomforts. Other intermediate forms were in a subjectively more stable and comfortable state, but were often productive of so deviant and bizarre behavior as to invite investigation by superiors.

Of interest in this respect are the legal difficulties that often befall the ambulatory schizophrenic patients in this setting. Three patients were referred for evaluation of suspected "homosexual traits." One of them, a 21 year old Private first class who denied both heterosexual and homosexual interests, while watching a movie of high adventure, had "felt sexy," and began caressing his buddy in the next seat. Another youth, passive, somewhat effeminate, and afflicted with gynecomastia, was referred in via his commanding officer to see if the derisive reaction of the man's barracks mates had any foundation. Two other patients were convicted by court martial for obviously bizarre behavior. One of these, while in a sort of dissociative state had driven off in a jeep with the avowed purpose of driving to Detroit, separated from him at that time by several thousand miles of ocean. He was convicted of stealing the vehicle but was removed from the punitive situation via hospitalization. Other minor deviant acts which might cause

little difficulty in civilian life, demand disciplinary or medical action in the military.

The sexual adjustment of these schizophrenic young men was characterized by immaturity and inhibition. Four of the 28 were married. Several made a blanket denial of all sexual thoughts or activities. Masturbation was sometimes admitted to as beginning in late teens and being infrequent. It was often associated with inordinate guilt. Homosexual behavior, also, was not prominent. There was one admitted act but otherwise there were no confirmed conscious homosexual activities among the 28 patients. In contrast, among the 300 patients were nine who were referred in as confirmed sexual deviates, none of whom showed evidence of a schizophrenic disorder.

The level of military adjustment among the 28 patients showed little uniformity. It ranged from a 19-year-old Private who broke down within a year of enlistment, to a decorated "hard-charging" Technical Sergeant with 14 years of service. The latter was seen in connection with a series of bizarre acts quite out of character. He had had a similar period shortly after his enlistment 13 years earlier and had been considered for a medical discharge at that time. For the group of 28 patients, the average length of service was 3.2 years while the average number of promotions was 1.4.

## COMPARISON WITH NON-SCHIZOPHRENIC PATIENTS

As mentioned, the patients were part of 300 referrals from a unit of Marine Corps troops. Although representing a wide range of conditions and referral channels, the 300 were somewhat more homogeneous than the overall troop population. They were usually young, the majority being under 25 years of age, did not have a rank above Corporal, and often had more than average disciplinary difficulties in the past. Diagnostically, the group was composed largely of character disorders (60%) and psychoneurotics (20%). Another 10% were alcoholics, sexual deviates, psychophysiologic, and miscellaneous disorders. As noted 10% of the total

comprise the schizophrenic group. If one may be permitted an over-generalization, based largely on the 60% character disorders, a certain type of patient emerges. This "typical" non-schizophrenic patient was a young, unmarried Marine Private who was sent to the psychiatrist in connection with some form of antisocial behavior. He was either referred by his officers or sought help himself because of the unpleasant situation he created for himself. He did not often present psychiatric symptoms as a complaint. He usually demonstrated considerable ability for drinking, fighting, and acquiring venereal disease. His time spent at actual work was often productive but his growing list of misdeeds and the legal and punitive expenses entailed generally made his career a poor investment for the service.

In contrast, the schizophrenic patient arrived at the psychiatrist's office because of more orthodox psychiatric problems. The ambulatory schizophrenic patient usually had sought out a medical officer, who in turn referred the Marine for psychiatric consideration. Such patients complained of subjective discomfort, such as extreme anxiety or fear, or thoughts of going insane. Six out of the 20 ambulatory patients had, among their presenting complaints, that of aggressive urges which they found difficulty in controlling. The eight schizophrenics who were hospitalized presented grossly deviant behavior and symptoms necessitating medical care.

Antisocial and aggressive acts were uncommon among the 28 schizophrenics as contrasted with the overall group of patients. Recorded disciplinary actions averaged 1.4 for the 28 patients; and 13 patients of the 28 had no offenses, a very uncommon occurrence among non-schizophrenics. The average of 1.4 itself is misleading since three out of the 28 patients accounted for 18 of the total 38 offenses by the group. These three exceptional patients had gotten into frequent difficulties as a result of their poor impulse control.

Along with this general lack of disciplinary difficulties was a marked degree of passivity in the personality (20 out of 28). The

passivity may have been observable in the form of the general adjustment pattern, or presented itself as a complaint by the patient. For example, some of the patients complained of being abused and bullied or of being too accommodating or gullible. A patient might complain that he was singled out as the buffoon of the outfit. Along with this feature were marked dependency traits (21 out of 28). The patients often showed evidence of crippling dependence on their parents or spouses. This feature readily demonstrated itself in the therapeutic relationship when psychotherapy was undertaken.

A useful distinction could be made concerning the manner in which the ambulatory schizophrenic presented his difficulties, as opposed to the "typical" patient. When the schizophrenic presented his feelings of aggressivity or depression, he did so as a complaint. It was ego-dystonic. It bothered him. He wanted help or he wanted to control it. In contrast, the other type of patient often presented his feelings as the basis for a kind of threat. If the authorities (or the interviewer) did not "do something" about his feelings, he implied, something terrible might happen; and it would all be the authority's fault. To the military psychiatrist, the threat of suicide in an acting-out personality is probably the most well-known of manipulative acts. This was not, however, a regular feature of the depressed ambulatory schizophrenic. The schizophrenic patient experienced discomfort from his symptoms. The character disorder experienced discomfort from reality pressures and sought to change reality through his symptoms.

Although one cannot differentiate the ambulatory schizophrenic from the psychopathic patient on the basis of his morals, it does appear that in this particular authoritarian setting the schizophrenic did not strike out against authority in the manner of many other patients. Furthermore, the commonest form of schizophrenic psychotic reaction seen was the paranoid, an illness which relieves hostility guilt through projection and is often associated with moralistic attitudes.

## MANAGEMENT AND COURSE

Both inpatient and outpatient facilities were available; and treatment was attempted on all patients not excluded by external factors (tactical, administrative, or legal). Treatment results were assessed in terms of military adjustment and symptom change, three broad categories of outcome being used: (1) Favorable, meaning that the patient completed his overseas tour effectively and experienced definite relief of symptoms; (2) Unfavorable, meaning that the patient's overseas tour was interrupted by medical evacuation, imprisonment, or administrative discharge from service; (3) Equivocal, meaning that the patient completed his overseas tour without major incident but presented no symptom amelioration. The emphasis in treatment and outcome was successful performance in the immediate environment.

The eight frankly psychotic patients were all treated in the hospital with daily psychotherapy sessions and drugs. Electroshock therapy was not used. Half of the group, four, showed evidence of a downward or chronic psychotic course and were medically evacuated within a month of breakdown. The other four were able to be returned to duty and followed as outpatients. Two relapsed within a few weeks and were in turn evacuated. The remaining two have done well although they have not been followed to the completion of their tours. In summary, six of the eight frankly psychotic patients showed unfavorable courses leading to evacuation as psychiatric illnesses.

The rather disappointing story of the psychotic group is in marked contrast to the course of the ambulatory group. Treatment was feasible for eleven of the twenty in this group. Eight followed a favorable course; two had an equivocal outcome, i.e., completed their overseas tours but professed no relief of symptoms; and only one showed an unfavorable course, receiving a brig sentence. None was hospitalized. Treatment and follow-up were not possible in the remaining nine patients of the ambulatory group.

The management of the outpatients in-

involved several treatment methods with a common denominator of "superficial" supportive psychotherapy. Psychopharmacological agents were used in varying dosages but were never looked upon as the mainstay of the treatment. In some cases the psychiatrist actively intervened in the military environment of the patient. Official channels were occasionally used in recommending transfer or reassignment of a patient. For example, one paranoid patient had a job in which secrecy was a pressing reality factor. Transfer afforded the patient considerable relief. More often, however, informal channels were used and probably effected real environmental changes. Local medical officers were informed of some of the aspects of the patient's functioning and learned to deal with his multiple and bizarre complaints with greater equanimity. The man's superiors were informed of his current precarious balance and urged, within limits, to lessen some of the pressures on him. Often, simply informing a few people in his unit that the man was having difficulties and that treatment was being attempted produced considerable and favorable response among the critical figures about the patient.

The psychotherapy of outpatients was on a once or twice weekly basis. The therapist made himself available to the patients for additional emergency sessions. The patients were made to feel free to call when loss of control threatened. This attitude was particularly fostered early in treatment. The course in treatment of these patients showed certain almost constant features. The patients all quickly developed a strong positive "transference," expressing in varying degrees attitudes of satisfaction toward the procedure of uninhibited conversation, admiration and gratitude toward the therapist. Within a few sessions, usually by one month, the patient experienced considerable relief. The abatement of subjective symptoms was not always accompanied by a similar change in objective functioning and often the patient tended to minimize his failings and dissimulate his symptoms in the presence of the therapist. To dismiss this reaction as a

"transference cure" explains very little nor does it do justice to the entire picture. In examining the past histories and follow-up of these patients, it became evident that the life course of many of these ambulatory schizophrenics is characterized by crises or dramatic transient upsurges of disorganizing anxiety. In the patients studied here the immediate environment seemed to contribute considerably in the development of the dangerous state. Unchecked it is likely that some of these crises could have progressed to outright psychosis. The past histories of the twenty-eight patients reveal that four had hospitalization for mental illness, and five others had one or more transient psychotic episodes, not eventuating in hospitalization. The latter are suggestive of the "micropsychoses" described by Hoch and Polatin.<sup>2</sup> Help at these times appears critical and is most valuable in terms of return on the therapist's investment. Furthermore, from the results with hospitalized patients, it would appear that once the patient passes the threshold to hospitalized illness, the regressive forces become too strong to be so readily overcome.

One might speculate on the success of psychotherapy with the outpatients. From the features observed it appears that this group of passive, dependent people were severely oppressed by their stern, unfamiliar, and unsupportive environment. Supportive psychotherapy seemed to offer the missing link, hence their rapid attachment to the therapy. Furthermore, their passivity denied them the outlet of flagrant misbehavior; and schizophrenic symptoms became their chief expression. The character disorder patients, on the other hand, were much cooler toward the psychiatrist and often maintained their acting-out in order to avoid therapeutic involvement.

#### SUMMARY AND CONCLUSIONS

Schizophrenic reactions among Marine Corps troops in a Far East Station were observed over the course of one year. An incidence of two patients per one thousand troops was noted.

Placing schizophrenic illness as the severest kind of psychopathology in the total group of patients, it appears that psychopathology does not necessarily correlate well with military maladjustment or economic loss to the service. In this particular setting, the most costly personality feature for the service was aggressive antisocial acting-out.

The life course of many of the schizophrenics encountered in this study was marked by crises in which psychosis threatened. These stages were brief and sudden, marked by extreme discomfort in the patient, and often subsiding quickly after the patient's encounter with the psychiatrist. If during such a phase, however, the patient is once hospitalized, then his chances for successful return to the same environment are very poor. This observation appears to be a peacetime extension of the principle of combat psychiatry which holds that the further a man is evacuated from the battleline, the more difficult he is to treat, and the more fixed becomes his illness.<sup>5,6</sup>

In times of strife, the nation must tap its borderline resources. The utilization of this source of man power deserves consideration. The opinion is here offered that the considered use of ambulatory schizophrenic patients could provide the armed forces with useful man power. It is further felt that the outpatient treatment of such patients at critical clinical periods is an economical investment for the armed forces.

#### REFERENCES

- <sup>1</sup> Duval, A. M., and Hoffman, J. L.: *Dementia praecox in military life as compared with dementia praecox in civil life*. War Medicine, 1: No. 6, 854-862, Nov., 1941.
- <sup>2</sup> Hoch, P., and Polatin, P.: *Pseudoneurotic forms of schizophrenia*. Psychiatric Quarterly, 23: 248-276, 1949.
- <sup>3</sup> Knight, R. P.: *Borderline states*. Bulletin of the Menninger Clinic, 17: No. 1, 1-12, Jan., 1953.
- <sup>4</sup> Zilboorg, G.: *Ambulatory schizophrenics*. Psychiatry, 4: 149, 1941.
- <sup>5</sup> Drayer, C. S., and Ranson, S. W.: *Combat psychiatry*. Bulletin of the U. S. Army Medical Department, 4: 91-96, Jul., 1945.
- <sup>6</sup> Kardiner, A., and Spiegel, H.: *War Stress and Neurotic Illness*, p. 44. New York: Paul B. Hoeber, 1947.

# Behavioral Inadequacies Among Naval Recruits

By

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THE opportunity to study a sizable number of young men presented itself in the spring of 1951, following the outbreak of the Korean conflict when the authors were concerned with the psychiatric assessment of volunteers for general Naval Service—volunteers in the sense that many had chosen to enlist in the Navy for a four year period rather than being drafted. The immediate task was to identify those young men who might not be able to adapt to the sometimes unique demands imposed upon the individual by military life. We were thus confronted with a prediction problem involving the ability to adapt to a new social environment. Due to the urgency of the situation it was necessary to establish certain immediate criteria based on the premise that those who demonstrated their inability to adjust to the immediate stresses of the military service would be poor risks in more extensive military operations involving a relatively long period of continual stress and the possibility of combat itself.

In addition to learning more about factors contributing to the inability of certain young men to make the transition from civilian life to that of the military, the problem of devising more adequate prediction techniques presented itself. Various procedures for the

psychiatric evaluation of candidates for military service have been reported in the literature, including brief and extensive psychiatric interviews, use of screening forms and questionnaires, psychological projective techniques and various sociological situational tests.<sup>1</sup> Yet from all these attempts, few systematic presentations have been made to give more insight into reasons why some men can make the immediate transition smoothly, and others seemingly cannot. No study found has attempted a controlled investigation to uncover possible personality similarities or differences between two such groups, although certain writers, mainly psychiatrists, have given suggested explanations. This paper will present preliminary findings from a project designed to explore certain facets of this problem.

## THE DESIGN OF THE EXPERIMENT

Certain restrictions inherent in the military service had to be met; those restrictions which interfere with the design of the experiment will become apparent, but it is hoped that they will not interfere to any appreciable extent with the validity of the findings as applied to the problems presented here. The research was undertaken as an integral part of the screening program of Naval recruits at the U. S. Naval Training Center, Newport, Rhode Island, in early 1951 and many of the recruits subsequently participated in the Korean conflict.

*Criteria for Initial Adjustment.* Some of the questions immediately raised in the psychiatric assessment of men for general Naval Service centered around the personality structure and its capacity to withstand stress and strain and to readily adapt to different and changing situations. The clinical identification of psychotic manifestations was not

The opinions and conclusions contained herein are those of the authors and do not necessarily reflect the official views of the Department of Defense or of the naval service.

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the immediate problem of the research, as all men were seen in brief psychiatric interview by a qualified Navy psychiatrist and additional ample opportunity was available for the appearance of psychotic symptoms during the 7 to 11 week period of basic training.

The five psychiatric diagnoses most frequently used in designating the candidates as "unsuitable" were those of "inadequate personality", "passive-dependency reaction", "passive-aggressive reaction", "emotional instability reaction", and "immaturity with symptomatic habit reaction: enuresis". These behavioral inadequacies interfered appreciably with interpersonal relationships among his recruit peers and superiors to warrant a discharge from the Naval service. For administrative reasons, it was far preferable to identify these persons before they complete their basic training. In the case of assessing personnel for various specialized assignments such as for flight training, the submarine forces, or officer's training, it was important to eliminate such individuals before they enter extensive training.

*The Unsuitables.* A sample of 390 recruits who showed evidences of behavioral maladjustment according to the criteria presented above were studied extensively. These recruits had demonstrated at some point during their recruit training that they were unable to adapt to the initial stresses imposed by the current military situation, and were admitted to the Neuropsychiatric Unit for extensive psychiatric examination and psychological studies; no attempt at treatment was undertaken. They were subsequently brought before a Naval Aptitude Board and discharged from the Naval Service with a general administrative discharge due to their "unsuitability".

*The Control Group.* In order to more clearly understand some of the difficulties which the "unsuitables" had in making this initial adjustment to the military, and for purposes of more accurately predicting such behavior, a control group of Naval recruits was chosen at random for study. All the young men who participated in this phase

of the investigation were examined independently by an experienced Navy psychiatrist, and those who gave indications of serious emotional disturbances or personality patterns which might interfere with their adjustment to the Naval service were eliminated.\*

A sample of 1,847 young men thus remained who completed their basic training satisfactorily and were subsequently assigned throughout the fleet, to various shore establishments, or to specialized service schools. These men ranged in age from 17 to 23 for the most part, with a mean age of 20.4 years, had attained an educational level ranging from 6 to 16 years (mean 11.8 years) with nearly three-fourths having at least entered the twelfth grade. They came from various socio-economic backgrounds and were recruited primarily from the eastern parts of the United States.

*The Technique Used.* A psychological projective technique, The Blacky Pictures, devised by Gerald Blum of the University of Michigan,<sup>2</sup> was administered to the 2,237 young men, along with a personal data sheet to obtain information relating to their social and cultural backgrounds. The Blacky Pictures is designed to elicit responses indicative of the overall personality development, and consist of a series of eleven cartoon-type drawings of a dog named Blacky, his parents, and a sibling of undetermined sex named Tippy. For this study, the eleven cartoons were photographed on slides, projected onto a large screen and presented to assembled groups of approximately 100 recruits. They were given test booklets asking various open-ended and multiple-choice questions concerning their interpretation of the situations depicted in the cartoons. The responses given by the maladjusted group and by the control group were then coded and punched on IBM cards, and the chi-square coefficient of contingency was computed on each of the multiple-choice and open-ended questions to de-

\* Psychiatric examinations were conducted under the supervision of Captain Robert R. Deen, MC, U. S. Navy, then senior psychiatrist, U. S. Naval Training Station, Newport, R.I.

termine the significance of the differences between the two groups.

#### THE FINDINGS

The responses given by the control group were in striking agreement with the original sample as reported by Blum.\* Further, the responses considered by Blum and others to be associated with disturbance in the various areas depicted by the test, were given significantly more often by the unsuitables than by the control groups.

The findings presented in this paper will be centered about those items which were *not* in agreement with those previously reported by Blum and others and only on those items which discriminated between the two groups at the *one percent* level or better.

The most significant findings seemed to center around the manner in which the maladjusted, as well as the normal recruits, handled their feelings. Certain areas such as feelings of dependency, feelings of rejection, the expression of aggression, authority relationships, and sibling rivalry seemed to be especially crucial ones in the responses given by these young men. As we have suggested elsewhere, the ability to relate to others, as well as the capacity to make adjustments to the military situation, seems highly predicated upon the manner in which these feelings are handled.<sup>3</sup> We will here consider briefly some of these areas and their implications for adjustment to the Naval service.<sup>†</sup>

1. *Feelings of Dependency.* There was evidence from certain test items that dependency strivings were more marked in our group of normals than in the original sample as reported by Blum. Those responses reported in the literature as being "neutral" or indicative of lack of involvement in this area did not prove to be the model responses for our group of normal Naval recruits. The unsuitables likewise manifested strong evi-

dences of dependency needs, but there were notable differences in the manner in which they handled them. The normal recruits apparently could accept their feelings without conflict, while the maladjusted group felt more rejected. There were further indications that the unsuitables were ambivalent in the manner in which they handled these feelings and vacillated between passive resignation and overt aggression.

2. *Authority Relationships.* The normals, as expected, tended to be able to identify with the father figure more readily and could accept him as the punishing figure more often than did the unsuitables. When asked on an accompanying questionnaire how often their father had the "final word" in problems arising in the family, twenty percent stated "always", and sixty-six percent responded "sometimes", while but eight percent revealed "hardly ever", and "never". It would thus seem that these attitudes reveal their conception of the father's role as essentially an authoritarian one. In another study using a portion of the control subjects, it was suggested that recruits reporting their fathers "never had the final word", were more ready to accept statements which rejected or condemned social outgroups than those whose fathers seemingly had more control in the family.<sup>5</sup> Apparently there is some relationship between the recruits' identification with the assertive father and their own security in the masculine or more aggressive role. Unfortunately, comparable data was not available on the unsuitables.

Among the unsuitables, it appears that the punishing figure has never really been conceptualized, consequently with the inconsistency over parental roles, there is much insecurity in family relationships. Twice as many unsuitables as normals gave openly aggressive reactions when confronted with being punished, revealing the extent of their anxiety when confronted with situations involving clear-cut authoritarian situations on the one hand, and their almost inappropriateness or lack of suitable means to cope with these situations on the other. Their responses reveal inappropriate thinking only as ex-

\* The original sample consisted of 119 males and 90 females, all freshman college students at Stanford University, c.f. reference 2.

† For more extensive treatment of the data including frequencies and probabilities on each test item response, see reference 4.

perimentally defined, i.e. their peers in the control group were able to make different choices significantly more often. We may infer that the unsuitables were less capable of making appropriate decisions involving the acceptance of authority symbols. They more readily resorted to choices involving non-disguised hostility, a factor extremely important in adjusting to any authoritarian institution, such as a military organization.

3. *Sibling Rivalry.* We found that most recruits expressed feelings of sibling rivalry, and, furthermore, they all seemed to react in some aggressive manner. Only 37 percent of the normals were able to respond to the "neutral" response, and, but two and a half percent denied any feelings of rivalry.\* Those remaining (slightly less than 60%) showed feelings of being rejected by the parents in favor of a sibling. It was shown previously that these recruits who were without siblings were less tolerant of persons of a different social heritage than those who had brothers and sisters. Further findings revealed that among those recruits with siblings, those who were the oldest in the family with only younger sisters tended to be more tolerant of other social groups, as did those recruits who were the youngest in the family with only older brothers and no sisters.<sup>5</sup> Thus it would seem that the presence of siblings and the ordinal position of the recruit in the family constellation are influential in the formation of his attitudes toward others and in his degree of security with his peers.

The manner in which the normals and unsuitables handled their aggressive feelings over sibling rivalry is quite striking. The normals were able to handle these feelings in a socially acceptable fashion on a competitive basis, while the unsuitables again expressed ambivalence in their responses, chiefly through maladaptive behavior. They were more likely to show passive resistance or to act out their impulses by "beating Tippy up". The normals emphasized competitive achievement which, when channeled into masculine

pursuits is one of the factors leading to successful adaptation to the military service.

4. *Feelings of Guilt.* Strong feelings of guilt were experienced by both groups. The normals tended to internalize their guilt feelings, and less than eight percent gave the "neutral" response. The findings suggest that normals are not able to handle their guilt feelings and attempt to solve them by withdrawing from the situation ("run away", "escape", "hide"). Likewise the unsuitables were not able to resolve their guilt feelings, but were more likely to attribute their guilt to others or to express aggression actively so the need for withdrawal was apparently not so great. Although the normals showed a great deal of guilt in various situations, they were able to throw it off so it did not become of ruminative concern.

5. *Feelings of Rejection.* Although a greater portion of the recruits expressed preference for "Blacky to be with Mama" rather than with "Papa", there were differences in the manner in which the normals and the unsuitables handled the feeling of rejection which the conflicting situation aroused. The unsuitables felt the situation with greater intensity and were unable to accept their feelings of rejection.

#### SUMMARY AND DISCUSSION

From the data presented in this study, (1) we have empirically demonstrated that there are statistically significant differences in responses to the test items between a clinically identifiable group of young men and a representative sample of "normal" young men, and (2) that the group of young men experiencing difficulties in making a new social adjustment more often selected test items theoretically chosen and empirically verified, to reflect maladaptive behavior. Evidence from our studies has been added to the "appropriateness" of the "correct", responses of the original test by obtaining a significantly large and varied sample of young men, more heterogeneous, and we believe, more representative than those thus far reported in the literature. We have shown the areas in which our sample differed from

\* Mean number of children per family was 3.8; only 10.5% were only children in the family.

the norms obtained by the originator of the test.

Our interest here, lies mainly in attempts at accounting for the meaning of the differences reported in this aspect of the research. Whether or not the test item responses can be shown have saliency and can be translated into expressions of overt behavior remains to be seen; at this point, we were primarily interested in looking at the differences in thinking between our two groups—more specifically in the attitudes inherent in their choices. As long as large scale military service is part of our social system, a significant portion of the nation's youth will be involved in adjusting to a new social and cultural milieu, one seldom of their own choosing. From other studies, it has been shown that from one to four percent of the young men arriving at a training station are unable to adjust to even the initial routine demands of military service and yet do not present overt neurotic or psychotic symptomatology.<sup>6</sup> They mainly manifest behavioral inadequacies which hinder their adaptability to change in social environments. A further group of personnel who are able to adjust to the initial phases of military life present long range adjustment difficulties manifested in debilitating neurotic, overtly psychotic and disciplinary difficulties, while a much larger group merely manifest their difficulties in reduced efficiency.

Which factors, then in the recruits' background and in the social aspects of military service are conducive to adjustment and which factors hinder adaptation? What techniques does the new recruit have at his disposal to make the necessary changes if

the two contain aspects which are incompatible? Our overall assumption is thus: the degree and nature of the adjustment of persons to a new social environment is largely dependent upon the compatibility of the value systems and the behavioral mechanisms between the two groups. It has further been shown elsewhere, that the extent of the new adjustment is contingent upon the person's ability to recognize and adopt new cultural patterns into his own value system.<sup>7,8</sup> This is certainly an orientation which offers much promise in future studies involving adaptability.

#### REFERENCES

- <sup>1</sup> Maskin, M. H. and L. L. Altman: Military Psychodynamics: Psychological Factors in the Transition from Civilian to Soldier. *Psychiatry* 6:263-269, (August 1943).
- <sup>2</sup> Blum, G. S.: A Study of the Psychoanalytic Theory of Psychosexual Development. *Genet. Psychol. Monogr.*, 39:1-99, (February 1949).
- <sup>3</sup> Molish, H. B., W. B. Lyon and D. L. Briggs: Character Structure of Adjusted and Maladjusted Naval Recruits as Measured by the Blacky Pictures. *Amer. J. Orthopsychiat.* 24, 1:164-175, (January 1954).
- <sup>4</sup> Briggs, D. L., Lyon, W. B., Molish, H. B., and Deen, R. R.: Selected Socio-cultural Factors Affecting Interpersonal Relations. 1: Discrimination between Normal and Maladjusted Naval Recruits, New London: Naval Medical Research Laboratory Report 227, July 1953.
- <sup>5</sup> Briggs, D. L.: Social Characteristics Associated with Ethnocentric Scores of Naval Recruits. *Res. Studies of State Col. of Wash.* 10, 2:51 (June 1952).
- <sup>6</sup> Lyon, W. B., unpublished study.
- <sup>7</sup> Caudill, W.: Japanese American Personality and Acculturation. *Genet. Psychol. Monogr.*, 45:93 (1952).
- <sup>8</sup> Briggs, D. L.: Social Adaptation Among Japanese American Youth: A Comparative Study, *Soc. & Social Research*, 38, 5:293 (May 1954).



## EDITORIALS

### Doctor Squibb

**E**DWARD ROBINSON SQUIBB, founder of E. R. Squibb and Sons, entered the U. S. Navy Medical Corps in 1847 and served with that branch of the military service until 1857. Shortly thereafter he started the manufacture of pharmaceuticals because he was stimulated by the need for pure drugs. This obsession came upon him while he served the Navy. Beset with all kinds of difficulties he developed a method for producing ether of a standard quality. This was not too long after

the introduction of ether as an anesthetic. All the story is told in the book, "Doctor Squibb," published by Simon and Schuster, New York.

That is another story. Recently, The Surgeon General of the Navy, Rear Admiral Bartholomew W. Hogan, accepted for the Navy an original oil painting of Dr. Edward Squibb which was presented by Mr. J. J. Toohy, General Manager of E. R. Squibb and Sons, on the occasion of the firm's 100th anniversary. In accepting the painting Admiral Hogan paid tribute to Dr. Squibb's contributions to the service, saying, "Among



*Official U. S. Navy Photo*

REAR ADMIRAL BARTHOLOMEW W. HOGAN (left), Surgeon General of the Navy, and MR. GEORGE S. SQUIBB, Ass't, Director of Sales of the E. R. Squibb & Co., look at an original oil painting of Dr. Edward Robinson Squibb, passed Assistant Surgeon in the Navy (1847-1857).



the highlights of his distinguished career in the Navy was the founding of the first naval laboratory at the old U. S. Naval Hospital in Brooklyn, New York. His drug preparations set standards of purity and quality heretofore unknown . . . so that while originally the laboratory supplied only the needs of the Brooklyn Navy Yard and Hospital, he was soon busy preparing drugs in response to demands of all our shore stations and fleets at home and abroad."

The painting will be on permanent display at the National Naval Medical Center.

During the same ceremonies, the E. R. Squibb & Co., was presented with the Secretary of Navy's Certificate of Merit Award. Admiral Hogan made the presentation on behalf of the Secretary of the Navy to Mr. J. J. Toohy.

## Individual Responsibility

**H**ERE are four more or less unrelated conditions which most people consider highly desirable:

1. Honest and competent men in public office.
2. Reduction in the cost of government.
3. Increase in the value of the dollar.
4. Streets and highways free of litter.

Yet many of these same people will prevent the realization of these conditions by:

1. Failing to vote.
2. Demanding an increasing amount of free service and help from the government.
3. Demanding higher wages without giving proportionately higher production.
4. Tossing litter on the streets and highways.

Why do people do this? Why do they, by their actions, defeat the objectives that they believe to be so desirable? Are they crazy? They behave like persons who have panicked in attempting to leave a burning building. They know that, if everyone moves quickly and quietly through the exits, all will be saved. Instead they push, shove, claw and scream, the exits are jammed and many are burned to death.

But is the insanity of the mob sufficient reason for the individual to act as a madman? Or, to put it another way, if we as individuals decide to behave as sane men what will become of the insane mob? It will disappear of course and that is the only way in which it can be made to disappear. The action of the individual, therefore, is not swallowed up by the multitude. It counts not for much; it counts for everything.—*The Kalends*, Williams & Wilkins Co. Sept.-Oct. '58.



## Around the World

(Ser. III, No. 2)

By

CLAUDIUS F. MAYER, M.D.

**B**RITISH COLUMBIA reported a recent case of *tularemia*, which reminds us that people are still but superficially indoctrinated about the ways and spreading means of this occasionally fatal infectious disease. In some of the *tularemia* infections known from *Canada* the bacillus was transmitted by a scratch from a cat, bite by a deerfly, a tick-bite, but most often by skinning of rodent animals sick with the disease (rabbits, coyotes). A reservoir of the infection is also present in a number of other provinces of the Canadian Dominion (Nova Scotia, Quebec, Ontario, Alberta).

Eskimos are isolated ancient inhabitants of the *Northern Arctic regions*. Leif Ericson and his Norsemen found them in Greenland as early as 1000 A.D. Those of them who are living in the Eastern Canadian Arctics are perhaps the most isolated and racially the most homogeneous among the Eskimos. As such they were thought very suitable subjects for *immunological studies*. Canadian Public Health officers (L. Greenberg et al.) found that syphilis was not prevalent in the studied population.

A Canadian physician who participated in the medical survey which the Eastern Arctic Patrol, aboard the *C. D. Howe*, carried out in 1957, described his medical observations during his northern trip. The *Indian and Northern Health Service* has two resident medical officers in the Eastern Arctic: at Chesterfield Inlet and at Pangnirtung. These places are provided with a hospital which is managed by a religious order. At other places of the area, nursing stations are established with registered nurse in charge. Other posts may have a supply of drugs, and communication with the doctor by radio. Among the Eskimos of this area, the infectious diseases are of major importance. Tuberculosis is prevalent, and the principal object of the

health surveys is the detection of active cases and their evacuation. Other acute respiratory infections are also common. "*Ship's fever*" is a peculiar acute respiratory ailment which develops after the annual visit of the supply ship. Enteric diseases are sporadic, and parasitism is evident, including echinococcosis in the caribou country, and trichinosis. Otitis media is common and such skin diseases as scabies, impetigo, boils, etc.

Arteriosclerosis and heart diseases as well as cancer are rare. Eye diseases are prevalent; so is enlarged liver which is ascribed to large consumption of vitamin A. Cold injuries are rare, because the Eskimos are clever in avoiding the conditions of frost bite. Isolation sometimes may cause the strange behavior of some individuals, but it usually develops in those who are mentally predisposed to "*becoming bushed*."

Under *Greenland's* thick icecap, which is sometimes almost 2,800 feet, huge fields of *uranium* ore were suspected by the Danes. A recent group of scientists from Germany, Switzerland, Denmark and France proved by laboratory research that the suspicion was right. Some of them proposed that the ice should be removed by means of atomic bombs. What about the radiation hazards?

Last December, in the Paris Court, a French pharmacist, inventor and seller of a remedy against boils, called *Stalinon*, was sentenced to two years of imprisonment and fined one million francs because the drug had *killed 102 people*, and left 100 others at least permanently affected. Damages of more than half a billion francs were awarded to the victims and their families. The poisonings occurred in 1954. According to some outstanding French medical journals (*Semaine thérapeutique*, 1958, 34) the drug *Stalinon* was an oral preparation, dispensed in capsules which contained 15 mg of di-

iodo-diethyl tin, and 100 mg of iso-linoleic acid (so-called Vitamin F). Many people did not have any bad effects from the capsules. Toxic symptoms developed in others. The toxic symptoms were those of tin poisoning, and they either ended in death or in a residual paraplegia.

Perhaps it is the bad example such as the one just mentioned in France which moved the *SWISS Inter cantonal Bureau of Drug Control* (a sort of "Food and Drug Administration") to be more rigorous with the manufacturers of drugs. Now, it is requested by the Bureau that any medicament which is manufactured and/or sold in Swiss territory in large quantities must get the approval of the central office. Mixtures and drugs made by local pharmacists and sold in their own shops in retail are excluded from the central control. The establishment of this Swiss drug-control bureau is of very recent date. It was authorized by law only in 1955. Its headquarters is in Bern. The bureau itself consists of three experts, a pharmacist, an internist, and a pharmacologist, all being professors of universities. There is also a practising physician on the examining board. The procedure of approval is about the same as in the U.S. If biological control and re-checking is necessary, such task is assigned to a university institution. This is the case with vitamins, hormones, antibiotics, cardiotonic glycosides, etc. The Bureau also makes periodic checks in drugstores and drug manufacturing plants. If anything objectionable is found the Cantonal sanitary authorities are notified who will then carry out the enforcement of the law.

Official control of *pharmaceutical preparations* becomes more and more difficult everywhere in the world. This is partly due to the large number of products, partly to the complicated nature of examination which may be occasionally required for the analysis of a newly manufactured drug. As an example, Canada may be mentioned where the drug market has about 26,000 various products. If only two batches of each of these are manufactured annually, the control labora-

tory has to make 52,000 analyses. This is the reason that the general tendency is to have the manufacturer develop his own suitable control system at all stages of his operations.

We just heard of a very, very special medical association called the *Society of the Reticulo-Endothelial System*. This society must have been in existence for some time because this August it held its second international symposium at Rapallo. The chief topics of the meeting were on the effect of the steroids, and of the radiations upon the cells of the RES, and the role of these cells in immunity. The previous meeting of the society was held at Gif-sur-Yvette, France, in 1956. The secretary of the Symposium, whose headquarters is in Genova, Italy, hoped the attendance was not too large so that the participants could exchange their views in more intimate discussions. By the way! Here are two new words which in the French speaking countries cover the occupation of our G.P.s:—*omnipractice* and *omnipractitioner*!

*Japanese research* workers have developed an *autoradiographic method for detecting fingerprints* on paper or cloth. This is great news for all police departments of the world. The material left behind in finger-print is sweat, containing minute traces of protein. When it is exposed to formaldehyde vapor, containing radioactive carbon particles, the formaldehyde becomes fixed on the protein, and the carbon is distributed in the exact shape of the finger-print. Then, the formaldehyde is removed, and the treated material is attached to a photographic film and placed in a light-proof box. The autoradiograph of the finger-print develops in 1-8 days.

A new type of disadaptational syndrome was recently described by Chinese doctors which they had observed among *newcomers in Tibet*. It is essentially an *edema of the lungs*. The patients were found mostly in mountainous areas at 12,000-13,000 feet above sea level during the cold seasons when the external temperatures were from 5 to 10 C° below zero. The great majority of the afflicted persons began to complain within

four days after their arrival at the high-altitude areas. It was thought that the condition resulted from the combination of anoxemia, cold, and lack of adaptation. Oxygen always gave prompt relief.

In its cultural exchange program, the Soviet Union sent pharmacologists, botanists, and internists to China to study traditional Chinese medicine for the treatment of hypertension, diabetes, and nephritis. The exchange doctors were assigned to institutes in Peiping and Shanghai.

Dr. Menhanlal Atal died a year ago in December. He was Vice-President of the All-India Peace Council, who in 1938 led an Indian medical team to aid China during the War of Resistance against Japanese aggression. He died during a recent visit to China. According to his will, half of his ashes were sprinkled at the confluence of the Ganges and Jumna rivers, and the other half over the Yellow River in commemoration of the friendship of the Indian and the Chinese people.

One of the main activities of the Ministry of Public Health in Red China is the popularization of native medicine. For this purpose, special agencies and committees are also at work. As the result of their efforts, a number of medical dictionaries, English-Chinese, have been published in recent years. We know of a vocabulary of pharmacology, a diagnostic terminology (1st and 2nd editions), a therapeutic terminology, and a vocabulary of histology and embryology, all of them issued during 1955.

Anybody know what *thominxosis* is? It is a very rare nematode infestation of the respiratory tract and of the lungs. The five previous cases are all from Russia, described in 1939, 1952 and 1956. Now, another case is reported from the First Medical Institute of Moskva. The parasite, *Thominx aerophilus*, is about 5-7 mm long, and lives in the nose, trachea, bronchi, producing chronic cough and slight haemoptysis.

A few months ago we mentioned the great ado about the Soviet Russian anti-polysclerosis vaccine prepared by Shubladze and Mar-

gulis, and the great demand for it by the British physicians. At the end of July, this year, Shubladze, chief of the Laboratory of the Ivanovsky Institute of Virology in Moskva, wrote a letter to the editor of the Brit. M.J., stating that the multiple-sclerosis vaccine also contains the S.V. strain of encephalomyelitis virus which is apparently identical with rabies virus. Hence, she recommended that the Russian vaccine should not be used for treatment of human cases of multiple sclerosis. Does this need comment?

From September 26 to October 1, Italian doctors participated in a Roman Medical Pilgrimage to Lourdes, under the auspices of the Medical Faculty of Toulouse. A day of the pilgrimage was dedicated to a Convention on Medical Ethical Studies, held in the Jeanne d'Arc room. One of the lecturers discussed the topic of "Medicine and Miracle."

A physician of the Middlesex Hospital in London finds that *medical journals are dull*. The titles of the articles are unattractive, and a poor title does not gain much by listing after it all the members of a multiple team of authors. This multiplicity is discouraging, says the doctor, since "ten men cannot write an article more than ten men can drive a car." The advertisements of the medical journals are also dull. (NOTE: This is so perhaps in the British journals!) What these ads show are "elderly men in shabby pyjamas hurrying along the passage with urinary frequency." They are certainly not attractive. Even the usual factual history of a patient can be made very much alive by good presentation, good style and by a little bit of immodesty. "I would rather be thought conceited than dull"—says the Middlesex doctor, advocating the use of "I." Articles are written to interest the reader, not to make him admire the author.

This bit of news is derived from the County Medical Officer's Annual Report (1957) in Devon. A mother of a 7-month old child at the welfare center revealed that her child had a bottle of stout every day, prescribed by a "doctor in Ireland" when the

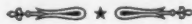
baby was 3 weeks old. On further inquiry it was found that the doctor of Ireland had in fact prescribed the stout for the mother, who, assuming that it would enter the child's body through her milk, continued to provide it on weaning—one-third stout, two-thirds milk in a bottle. And apparently the *baby liked the formula!*

About 40 years ago, soon after World War I, one of our colleagues, a big-hearted soft-voiced woman arrived in India's Pakistan where she became a sort of *Dr. Schweitzer in skirt*, bringing relief among the suffering Moslem women of that country who have been living in strict seclusion ("purdah") under such miserable conditions that their life expectancy at that time was hardly 27 years. This pioneer lady doctor, whose name is *Dr. Anna Dengel*, soon recognized the need for medical missionary work not only in India and Pakistan, but also in other backward countries of the world. She thought that the best and most unselfish medical service could be rendered to these secluded people of her sex by other young women doctors who would renounce their family ties, and, under observation of the rules and regulations of Catholic monastic life, would devote their entire life to the sick people of the backward countries of the world.

Thus, with the permission and benediction of the Church, the *order of the Medical*

*Mission Sisters* was founded in 1925 by Dr. Dengel in the United States. During the past 30 years, the order has been growing until now it has houses of study and formation (novitiates), medical centers, and hospitals in various parts of the world. The young nuns of Mother Dengel, who now resides in Philadelphia, are educated at professional schools in medicine, surgery, pharmacy, nursing, and a number of ancillary sciences of medicine. Many of them graduate as M.D.s, and are sent to staff the various missionary hospitals of the Order.

Such hospitals, some of them with 200 beds or more, are now functioning in Pakistan (at Rawalpindi, Karachi, Dacca, and Mymensingh); in India (nine), in Java (two) and in Celebes (two), in Africa at the Gold Coast and in South Africa (three), and one hospital in Venezuela. The *hospital at Maracaibo, Venezuela*, was built in 1951 by the Creole Petroleum Corporation for the employees of the company, but it is administered and staffed by the Medical Mission Sisters. The sisters have to study hard. Thus, a Sister-surgeon needs at least ten years to develop dexterity in the use of the surgical knife. Truly, it is a wonderful vocation to follow in the steps of the Divine Doctor, and to combine the power of Faith and of the Cross with the Love of Mankind and the marvels of modern medicine! *Multa paucis!* and MERRY CHRISTMAS!





## The Sir Henry Wellcome Medal and Prize

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### COMPETITION FOR 1959

THE competition is open to all medical department officers, former such officers, of the Army, Navy, Air Force, Public Health Service, Veterans Administration, The National Guard and the Reserves of the United States, commissioned officers of foreign military services, and all members of the Association, except that no person shall be eligible for a second award of this medal and prize and no paper previously published will be accepted.

*The award for 1959, a medal, a scroll, and a cash prize of \$500, will be given for the paper selected by a committee composed of the Association's vice-presidents which reports on the most useful original investigation in the field of military medicine. The widest latitude is given this competition, so that it may be open to all components of the membership of the Association. Appropriate subjects may be found in the theory and practice of medicine, dentistry, veterinary medicine, nursing and sanitation. The material presented may be the result of laboratory work or of field experience. Certain weight will be given to the amount and quality of the original work involved, but relative value to military medicine as a whole will be the determining factor.*

Each competitor must furnish six copies of his paper which must not be signed with the true name of the author, but are to be identified by a *nom de plume* or distinctive device. These must be forwarded to the Secretary of the Association of Military Surgeons of the United States, Suite 718, 1726 Eye St. N.W., Washington 6, D.C., so as to arrive at a date not later than 20 June 1959, and must be accompanied by a sealed envelope marked on the outside with the fictitious name or device assumed by the writer and enclosing his true name, title and address. The length of the essays is fixed between a maximum of 10,000 words and a minimum of 3000 words. After the winning paper has been selected the envelope accompanying the winning essay or report will be opened by the Secretary of the Association and the name of the successful contestant announced by him. The winning essay or report becomes the property of the Association, and will be published in *MILITARY MEDICINE*. Should the Board of Award see fit to designate any paper for "first honorable mention" the Executive Council may award the writer life membership in The Association of Military Surgeons, and his essay will then also become the property of the Association.

## SUSTAINING MEMBERS

It is a privilege to list the firms who have joined The Association of Military Surgeons as Sustaining Members. We gratefully acknowledge their support.

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## ASSOCIATION NOTES

Timely items of general interest are accepted for these columns. Deadline is 3rd of month preceding month of issue.

### Department of Defense

*Ass't Secretary (Health & Medical)*—HON. FRANK B. BERRY, M.D.

*Deputy Ass't Sec'y*—HON. EDW. H. CUSHING, M.D.

#### SELECTIVE SERVICE

The Department of Defense has requested the Selective Service System to provide Armed Forces Induction Stations with 11,000 men during December 1958 for assignment to the Army. This December call is the same as for the months of September, October, and November.

#### INTERN AND RESIDENT PAY

Any commissioned officer of the Medical Corps who was serving on active duty before July 1, 1954, as an intern or resident physician in a hospital other than a Federal Hospital, is entitled to retain payments of pay and allowances during that period to the extent that such compensation, pay and allowances were paid.

The law provides for a refund to those officers who have made repayments of such amounts assessed against them. Claim may be submitted citing Public Law 85-869, 85th Congress.

### Army

*Surgeon General*—MAJ. GEN. SILAS B. HAYS

*Deputy Surg. Gen.*—MAJ. GEN. JAMES P. COONEY

#### ASSIGNMENT IN SGO

Lt. Colonel Robert G. McCall, MSC, has been appointed Chief, Sanitary Engineering Section and Assistant Chief of the Medical Service Corps in the Office of the Surgeon General.

Colonel McCall, a native of Follansbee, West Virginia, is a Diplomat of the American Academy of Sanitary Engineers. He has served as Medical Inspector of the 97th Infantry Division, Sanitary Engineer in the Medical Section of the Fifth Army, and more recently as Chief Sanitary Engineer of the Medical Division in the Headquarters, U. S. Army Europe.

#### MEDICAL ADVISOR TO BRAZILIAN ARMY

Lt. Colonel Wayne S. Hume, assigned to the Medical Section of Headquarters, U. S. Continental Army Command, was awarded the U. S. Army Certificate of Achievement for his outstanding performance of duty as medical advisor to the Brazilian Army, while



U. S. Army Photo

(L to R) COL. JOS. G. COCKE, CONAC SURGEON  
AND LT. COL. W. S. HUME.

serving with the U. S. Army Element, Joint Brazil-United States Military Commission, from September 1954 to June 1958.

In carrying out his duties Colonel Hume made many trips by air throughout Brazil, flying over the trackless jungles of the Matto Grosso region and personally visiting many outlying medical stations.

#### FINGERPRINT IDENTIFICATION

A new battlefield fingerprinting process that instantly produces a tissue-thin, almost indestructible plastic cast of direct or latent prints has been developed by the Army Quartermaster Corps for use in the identification of military war dead.

Fingerprint casts are obtained by spraying a liquid plastic compound directly on a finger or on a surface with a latent print. Hardening immediately, the plastic is easily peeled from the area and the resultant replica provides an easily handled, smudge-proof fingerprint permanently imbedded in the plastic material from which positive identification can be made.

## Navy

*Surgeon General*—REAR ADM. BARTHOLOMEW W. HOGAN

*Deputy Surgeon General*—REAR ADM. BRUCE E. BRADLEY

#### HONORED

Rear Admiral Bartholomew W. Hogan, has been awarded the "Cruz Peruana al Merito Naval, en el grado de Gran Oficial Distinctivo Blanco" ("The Peruvian Cross of Merit") by the President of the Republic of Peru and the Peruvian Navy. The decoration was presented Admiral Hogan through Rear Admiral Luis Edgardo Llosa, Naval Attache, Embassy of Peru, Washington, D.C., in connection with the celebration of Peruvian Navy Day.

The basis for this high award was in recognition of the assistance the U. S. Navy Medical Department has given the Peruvian Naval Medical Department.

#### NOTES

Rear Admiral Curtis W. Schantz, formerly Commanding Officer of the Naval Dental School at the National Naval Medical Center in Bethesda, Maryland, has been assigned as Assistant Chief of Dentistry in the Bureau of Medicine and Surgery.

Rear Admiral Bruce E. Bradley attended the cornerstone laying ceremony of the new 15-story Naval Hospital at Portsmouth, Virginia on October 17.

The hospital is one of two under construction, the other one being at Great Lakes, Illinois. The Portsmouth hospital will have a designed capacity of 800 beds, with supporting services capable of accommodating a 700-bed extension. The estimated completion date is December 1959.

#### RETIRED

The following Medical Service Corps officers have been retired: Commander William A. Breathwit, Lt. Commanders Oscar E. Eisen, Ogden C. Graham, Joe R. Nix, Harold J. Sylvester, and Lieutenant Jack W. McQuerry.

The following Medical Corps officers have been retired: Captains Wilbur E. Kellum, Carl H. McMillan, John D. Walters, Jesse G. Wright, and Harold G. Young. Captain Kellum was advanced on the retired list to the rank of Commodore and Captain Young to the rank of Rear Admiral.

#### DENTAL COURSE AVAILABLE

A home-study type of extension course in partial denture prosthesis (Prosthodontics, Part II, NavPers 10764) is now available to officers of the U. S. Navy Dental Corps. Developed by the staff of the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland, with the assistance of professional test writers of the home-study department of the University of Chicago, the course comprises assignments in diagnosis, treatment correlation, impression making, and the equilibration of the natural dentition and partial dentures. Included in the course material are a new

edition of a widely accepted partial denture textbook and the Glossary of Prosthodontic Terms.

This course is the first of a series of post-graduate extension courses being prepared under the auspices of the Naval Dental School to augment the present continuing education program of the Navy Dental Service. During the coming year, other courses will become available in complete denture prosthesis, operative dentistry, oral diagnosis, periodontics, oral surgery, and crown and bridge prosthesis.

#### COURSE AVAILABLE

*Submarine Medicine Practice* (NavPers 10707-A, revised 1958) is a recommended course for all Medical Department personnel.

This course is a presentation of the highlights of latest developments, the accumulated knowledge and experience resulting from years of research and investigations. It consists of six objective type assignments and is evaluated at eighteen Naval Reserve promotion and/or non-disability retirement points. Naval Reserve personnel who previously completed course NavPers 10707, WILL receive additional credit for the completion of course NavPers 10707-A.

## Air Force

*Surgeon General*—MAJ. GEN. OLIVER K. NIESS

*Deputy Surg. Gen.*—MAJ. GEN. OLIN F. MCILNAY

#### NEW SURGEON GENERAL

Major General Oliver K. Niess became the new Surgeon General of the Air Force on December 1. He succeeded Major General Dan C. Ogle who retired.

General Niess, a native of Belleville, Illinois, graduated from the Washington University School of Medicine, St. Louis, Mo., in 1927, and then served an internship at the Fitzsimons General Hospital in Denver, Colo. He has been with the military medical



Official Air Force Photo

MAJ. GEN. OLIVER K. NIESS, USAF (MC)

services since his graduation.

From 1939 to 1944 his assignments included: Medical Advisor to the Athletic Association at the U. S. Military Academy; Post Surgeon at Maxwell Field, Alabama; Commander of the hospital, and Assistant to the Surgeon of the First Air Force at Mitchel Field, New York.

During World War II, he served as Director of Administration in the Office of the Air Surgeon, Washington, D.C.; as Surgeon of the India-China Division, Air Transport Command, Calcutta, India; and as Surgeon of the Pacific Division, Air Transport Command, in Hawaii. He has served in the Office of the Secretary of Defense, the Office of the Surgeon General of the Air Force, and at the time of his recent appointment was Command Surgeon of the Pacific Air Forces in Hawaii, a position he has held since September 1954.

General Niess is board certified in aviation medicine and is rated as Chief Flight Surgeon and as Aircraft Observer (Medical). His professional affiliations are: Fellow of the American College of Surgeons; a member of the American Medical Association, the



Aero Medical Association, and the Association of Military Surgeons of the United States.

#### GENERAL OGLE RETIRES

Major General Dan C. Ogle, Surgeon General of the Air Force for the past four years, retired on November 30.

A Chief Flight Surgeon since 1932, he has dedicated himself to aeromedicine in its broadest aspects. Under his administration the Air Force has realized its goal for an Aeromedical Research Center at Brooks Air Force Base, Texas, and the construction of 170 new medical facilities worldwide.

A native of Keithsburg, Illinois, he became its mayor while assistant principal of the high school. He decided upon a medical career and graduated from the University of Illinois College of Medicine in 1929. Then he entered the U. S. Army Medical Corps where he soon manifested his interest in aviation medicine.

His overseas assignment during World War II took him to Italy where he was assigned as Surgeon of the Fifteenth Air Force and pioneered the development of a medical service to support strategic Air Force operations.

In 1945 he became Surgeon of Air University and instructor in medical subjects. Upon graduating from the Air War College in June 1949, General Ogle was assigned as Special Assistant to the Surgeon General and subsequently as Deputy Surgeon General.

In March 1953, he was named Surgeon of the United States Air Forces in Europe at Wiesbaden, Germany, and the following year was recalled to Washington to assume the position of Air Force Surgeon General.

General Ogle is a Fellow of the American College of Physicians and the Aero Medical Association; an Honorary Fellow of the International College of Surgeons; a Diplomate of the American Board of Preventive Medicine with certification in Aviation Medicine (Founders Group); a member of the American Medical Association, the Association of Military Surgeons, and many other organiza-



Official Air Force Photo

MAJ. GEN. DAN C. OGLE, USAF (MC), RET.

tions. On November 18 he was awarded the Distinguished Service Medal which was presented by Maj. Gen. T. D. White, Air Force Chief of Staff.

#### ASSIGNMENTS

Lt. Colonel Paul Eggerston has been assigned to the Office of the Surgeon General as Consultant in Neurology and Psychiatry. He replaces Lt. Colonel Robert L. Williams who will be Associate Professor of Psychiatry at the University of Florida College of Medicine.

Colonel Herbert W. Coone will replace Colonel Archie A. Hoffman in the Office of Surgeon General as Consultant in Internal Medicine in February 1959. Colonel Hoffman will be assigned as Chief of Professional Services at Andrews Air Force Base Hospital, Washington, D.C.

#### ASSIGNMENT SCHOOL OF AVIATION MEDICINE

Colonel John E. Pickering has been named Director of Medical Research at the School of Aviation Medicine, Randolph Air Force Base, Texas. He has been with the school since 1948 and has been Chief of its Depart-

ment of Radiobiology since 1952, a position which he will continue to fill. He holds the Air Force flight rating of Senior Navigator.

## Public Health Service

*Surgeon General*—LEROY E. BURNET, M.D.

*Deputy Surg. Gen.*—JOHN D. PORTERFIELD, M.D.

### ASSIGNMENT

Dr. Richard A. Prindle has been named Chief of the Air Pollution Medical Program of the Public Health Service to succeed Dr. Wilton M. Fisher who became Chief of the Training Branch, Division of Personnel.

### RETIRED

The following Commissioned Officers of the Public Health Service have retired: Senior Surgeons Fritz Hurd and Joseph F. Paulones; Senior Sanitary Engineer Richard P. Long; and Nurse Officer Florence E. McKerrow.

### ANTIHYPERTENSIVE DRUG

JB 516 (1-phenyl-2-hydrazinopropane) has been reported to produce marked and sustained lowering of blood pressure in patients with hypertension. The report was made by Doctors Louis Gillespie, Jr., Luther L. Terry, and Albert Sjoerdsma, research physicians of the National Heart Institute, Bethesda, Maryland.

### POLIO VACCINATION

Now is the time to start anew that campaign for vaccination against poliomyelitis. For the first 42 weeks of 1958 there were 2,242 cases of paralytic polio as compared to 1,825 for the same period of 1957. There is plenty of vaccine available but people have become lax in getting their injections.

Of 265 cases in Detroit who had received Salk vaccine, there were 70 who had paralytic polio and two of these died. Among another group (316 victims) who had not received the vaccine there were 202 cases of paralytic polio, and 17 died.

Three injections are recommended for all persons forty years of age and under. Have you been vaccinated? Has your neighbor been vaccinated? LET'S TALK UP THE VACCINATION FOR POLIO DURING THESE WINTER MONTHS SO AS TO BE PREPARED FOR THE SUMMER MONTHS TO COME.

## Veterans Administration

*Chief Medical Director*—WILLIAM S. MIDDLTON, M.D.

*Deputy Chief Med. Dir.*—R. A. WOLFORD, M.D.

### VETERAN POPULATION

The veteran population in civil life at the end of September was estimated at 22,723,000. World War I accounted for 2,852,000, and prior wars and the Regular establishment accounted for 134,000.

### MEDICAL RESEARCH

More research on some of the major medical problems that have confronted the Veterans Administration will be possible during this fiscal year which began July 1, 1958, because of additional appropriations voted by the 85th Congress.

Some of the programs will be in the areas of aging, mental illness, cancer, heart and blood vessel disorders, and tuberculosis.

### ELECTED TO POSITION

Lee D. Cady, M.D., Manager of the Veterans Administration Hospital, Houston, Texas, has been elected to the Executive Committee of the new Medical School—Teaching Hospital Section of the Association of American Medical Colleges.

### WHEELCHAIR HOMES

Of the 7,091 veterans who have established their eligibility for special grants because of the need for special type homes, more than 5,400 have received Federal grants totaling more than \$51 million.

The Veterans Administration defrays 50

percent of the cost of "wheelchair homes" for eligible veterans up to a maximum of \$10,000 under grants which were first authorized in 1948.

#### PATIENT LOAD

The average daily patient load in Veterans Administration hospitals for September was 110,725 to which should be added the load in non-VA hospitals (3,100).

The total visitors for medical care during September on an outpatient basis were 182,366.

#### GI INSURANCE CONVERTIBLE

Previously non-convertible term GI insurance will be convertible beginning January. Holders of policies bearing the letters "RS" preceding the number will have three options:

1. To convert their RS term policies to permanent plans of GI insurance.
2. To exchange their RS term policies for a "limited convertible" term policy carrying a lower premium rate, but which—after September 1, 1960—cannot be renewed by persons who have passed their 50th birthday.
3. To keep their RS term policies at the currently established premium rates, which increase every five years.

#### GI MORTGAGE LOANS

Veterans selling their homes and "GI" mortgages must first contact the Veterans Administration if they want to be released from liability to the Government on their loans.

The release protects veterans if the new purchaser defaults in payments. The new purchaser need not be a veteran.

#### VETERANS BENEFITS

The laws relating to veterans' benefits were revised, codified, and enacted as Title 38, United States Code, Veterans' Benefits, Public Law 857, 85th Congress, effective January 1, 1959. The catalog on this (Cat. No. Y 4. V 64/3:B 43/6) can be obtained from the Government Printing Office, Wash-

ington 25, D.C., for \$1.00 (check or money order).

## National Guard

#### RECEIVES MEDAL

Colonel Archibald Laird, MC, Pa. NG, was recently presented the Pennsylvania Twenty Year Service Medal at the Ninth Annual Organization Day dinner of the 83d



Mary Darrin

(L to R) COL. SNYDER, COL. LAIRD, GEN. SNYDER.

Medical Group which was held in Wellsboro, Pa. The presentation was made by Colonel Richard Snyder, Deputy Adjutant General of Pennsylvania.

Brigadier General Victor D. Washburn, Delaware National Guard, retired, was the speaker at the dinner. He has been a member of the Association of Military Surgeons for over thirty years. Colonel Laird has been a member of the Association since 1937.

## Miscellaneous

#### VIRUSES "GLOW"

The development of a new method which enables medical workers to diagnose more quickly such infectious virus diseases as influenza, measles, mumps and chicken pox has won the Kimble Methodology Research Award for Dr. Albert H. Coons, Harvard Medical School.

The method used is the tagging of the antibodies with a fluorescent dye so that they will glow under ultra-violet light. To find a cell

infected with a virus, serum containing tagged antibodies of the disease is put on a piece of tissue. The antibodies will adhere only to the specific virus. The presence of the specific virus is not only detected but accurately located within the cell.

#### AIR-BORNE BACTERIA

Dr. Carl W. Walter, Associate Clinical Professor of Surgery at the Harvard Medical School and Surgeon at the Peter Bent Brigham Hospital, Boston, labeled the nasopharynx, the floor, the laundry, and air conditioners as "four great multiplying cycles" in the spread of air-borne bacteria which can turn hospitals into "contagious institutions."

These points were brought out in the first lecture in the second year of a series of Becton, Dickinson Lectures at Seton Hall College of Medicine and Dentistry, Jersey City, N.J.

Turning to the "chief carrier problem," Dr. Walter said, "the diseased nasopharynx is very hazardous, because when the respiratory tract is inflamed, the staphylococci grow as secondary invaders and multiply 3,000% to 4,000%. The increased discharge from the nasopharynx soils hands, skin, handkerchiefs, clothing and environment. The carrier thus becomes a multiplier and an active spreader. This is the carrier that should be banned from the clinical situation."

#### ULTRASONIC INSTITUTE OFFICERS

The American Institute of Ultrasonics in Medicine at a recent meeting in Philadelphia elected Jerome Gersten, M.D., of Denver, president, and John H. Aldes, M.D., Los Angeles, secretary-treasurer. On the Executive Board is Lt. Colonel John H. Kuitert, MC, USA, now stationed in Ottawa, Canada. He is a member of our Association.

The secretary may be contacted at the Cedars of Lebanon Hospital, 4833 Fountain Ave., Los Angeles 29, California.

#### GORGAS MEMORIAL INSTITUTE

The Gorgas Memorial Institute of Tropical and Preventive Medicine with Executive

Offices at 1835 Eye St., Washington 6, D.C., held its annual meeting on October 22 at the Pan American Union.

The laboratory of the Institute located in Panama City, Panama marked up its thirtieth year of operation in the research in tropical and preventive medicine in the American tropics.

At the meeting the incumbent officers of the Institute were re-elected for another year, as follows:

President emeritus—Colonel Joseph F. Siler

President—Dr. Walter A. Bloedorn

Vice-president and general counsel—Mr. Maurice H. Thatcher

Secretary—Dr. Louis L. Williams

Treasurer—Mr. Hulbert T. Bisselle

Assistant treasurer—Mr. Donald A. McCormack.

#### FOOD AND DRUG ASSIGNMENT

Dr. Paul L. Day, biochemist of the University of Arkansas School of Medicine, has been appointed to the new position of Scientific Director of the U. S. Food and Drug Administration.

His assignment will be to work as the staff arm of the Commissioner, George P. Larrick, in the formulation of broad scientific policy, and to work directly with FDA scientists in the designing of experimental programs to achieve the objectives of the Administration.

#### REPRESENTS ASSOCIATION

Colonel Roland I. Pritikin, MC, U. S. Army, Reserve, an ophthalmologist of Rockford, Illinois, represented our Association at the 18th International Congress of Ophthalmology held at Brussels, Belgium, last October.

#### RETIRED

Brigadier S. G. U. Shier, who was Director General of Medical Services, Royal Canadian Army Medical Corps, was honored at a dinner held at the Army Headquarters Officers' Mess on September 29. He was pre-

sented with an inscribed silver tray from the officers of the Royal Canadian Army Medical Corps.

Brigadier Pierre Trembley succeeded Brigadier Shier as Director General of Medical Services.

#### CIVIL AIR SURGEON

The position of Civil Air Surgeon for the newly created Federal Aviation Agency will give the holder a salary of \$19,500. The Administrator of the Agency is General Elwood R. Quesada, U. S. Air Force, retired.

#### ANTIBIOTICS

More than 2.5 million pounds of antibiotics are produced each year in the United States. This was brought out by Dr. Henry Welch, chairman of the recent three-day symposium on antibiotics held in Washington, D.C.

#### DECREASE IN BIRTH RATE

It is estimated that there will be 50,000 less births for the year 1958 than for last year. But don't worry, with the war time births we can expect an increase in marriages in the next few years and the birth rate will be up again.

The population of the United States at the end of August was 175 million and by 1972 is expected to be 200 million.

#### LIFE EXPECTANCY

In the United States life expectancy at birth is 69.6 years according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company. In 50 years twenty years has been added to the span of life for our people.

#### PROBLEMS OF AGING

As we are increasing the numbers of persons in the age bracket of 60 and above our problems for the care of this group are likewise increasing. Productive years have not ended in a vast majority of the cases but industry interest in this age group naturally decreases.

We must find some way to prepare the American for this period of life. A person's interest will have to be aroused many years before he actually approaches the day when he is no longer wanted for the fast pace of the business world.

#### INDUSTRIAL HEALTH

Industrial physicians are becoming concerned about the large group of Americans who hold down more than one job to make ends meet. The "moonlighter," they say, is subject to more heart strain than workers putting in an equal number of hours in overtime on a single job. The tension created by having more than one place of employment, two bosses to please and several routines to keep in mind are taking a heavy toll of workers' health.—*Advertiser's Digest*.

#### EDUCATION

To critics who have said that our schools are stressing quantity rather than quality, I wish to point out that with about 6% of the world's population, the United States has trained 21.6% of the winners in the 57-year history of the Nobel Prize awards.—Dr. Lyman V. Ginger, president, National Education Association.

#### OBESITY

An interesting ceremony took place in 1778 at West Point. A group of American army officers were weighed and their weights recorded. General Washington tipped the scales at 209 pounds; of the 11 officers present at the time only three weighed less than 200 pounds.—*Quote*

#### FOREIGN MEDICAL GRADUATES EXAMINATION

Two American medical qualification examinations will be held in 1959 (Feb. 17 and Sept. 22) for foreign medical graduates. For further information write to: Educational Council for Foreign Medical Graduates, 1710 Orrington Ave., Evanston, Ill.

#### COURSE AVAILABLE

*Summer School of Alcohol Studies*, 17th Annual Session will be held at Yale Univer-



sity June 28-July 23, 1959. Further information may be obtained by writing to: Registrar, 52 Hillhouse Ave., Yale Station, New Haven, Conn.

#### MEETING

The American College of Chest Physicians will hold its Silver Anniversary in Atlantic City, N.J., June 3-7, 1959. For further information address the Secretary at 112 East Chestnut St., Chicago 11, Ill.

#### CONFERENCE

The Second World Conference on Medical Education under the auspices of The World Medical Association will be held at the Palmer House, Chicago, Ill., Aug. 30-Sept. 4, 1959. The theme will be "Medicine—A Life-long Study."

Further information may be obtained by writing to the Secretary General, 10 Columbus Circle, New York 19, N.Y.

#### WANTS OLD PHOTOS

Physicians at the wheels of cars of 1900-1910 vintage are wanted on a loan basis by the Illinois Medical Journal for the purpose of showing the role of doctors in the development of the automobile.

Photographs should be accompanied by a memorandum giving the name and town of the physician, whether living or deceased, and the make and year of the automobile. They should be sent to Mr. John A. Mirt, Illinois State Medical Society, 185 North Wabash Avenue, Chicago 1, Illinois.

#### GADGET AMBULANCE

Eight berths, 33 red and white lights, a generator for x-rays, loud speakers, flood lights, recording machine in addition to oxygen, first aid kits, and the standard equipment for an ambulance are aboard the vehicle used by the medical department of the Baway Refinery of Esso Standard Oil Company, Linden, New Jersey.

Dr. Thomas F. Nevins, Jr., medical director, was in the military service during World War II. The ambulance is his brain child,

the result of his experiences in New Guinea and Kwajalein. He feels that in disasters there is need for more than the usual equipment on an ambulance for the efficient operation of the medical service.

#### BOOKLETS AVAILABLE

*The Worry-Go-Round* (for men) and *Needlepoints* (for women) are booklets of cartoons and sound advice for those that are experiencing tensions. If you want to see what these are like address Henry B. Rollins, M.D., Medical Director, The Connecticut Mutual Life Insurance Co., Hartford, Conn., and copies will be sent you at no cost.

#### MORE MONEY FOR TREASURY

The simple life rather than luxurious living, thereby creating more money for the French Treasury, was advocated by Étienne De Silhouette (1709-1767), controller-general of France. The word "silhouette" became a popular term for a figure reduced to its simplest form.

#### AMERICAN GOAL

"The true goal of the American way of life is the creation of a self-reliant, individually responsible, self-disciplined, well-educated, and spiritually-oriented people."—Walter Hoving, "What Is the American Goal?"—*Guideposts*.

#### TIME AND SPACE

It is estimated it will cost \$3 billion to send a man to the moon. Reckon we ought to dig up that old war slogan: "Is this trip necessary?"—*P-K Sideliner*, Peter Kuntz Co.

#### TRACKING NUCLEAR CLOUDS

Spotting and tracking of nuclear clouds with a relative degree of accuracy by means of radar may now be possible. Tests made by the U. S. Army Signal Corps show that the Army's advanced weather radar systems, ordinarily used to detect storms and aid in forecasts, may also help to warn soldiers and civilians of probable areas of radioactive fallout from nuclear explosions.

REPORTS AVAILABLE

*Thermoelectric Measurement of Cerebral Blood Flow* (PB 131833). Price 50¢

*The Physiological Basis For Various Constituents in Survival Rations* (PB 131709). Price 75¢

*Nuclear Safety Guide*, Price \$1

*Isotopes: A Bibliography of U. S. Research and Application* (TID-3076). Price \$2.25

*Effects of Elevated Temperatures on Performance of a Complex Mental Test* (PB 131666). Price 50¢

*An Estimation of Exposure to Carbon Monoxide by Breath Analysis* (PB 131828). Price 50¢

*Postmortem Carbon Monoxide Analysis: Significance of Tissue Blood Content* (PB 131725). Price 50¢

*A Study of Muscle Forces and Fatigue* (PB 131722). Price \$1.50

Above are available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D.C.

DICTIONARY

*Russian-English Biological and Medical Dictionary*. 1st Ed. By Dr. Eugene A. Carpo-  
vich. Technical Dictionaries Co., New York.  
Price \$12.00

This dictionary, just published, contains about about 35,000 Russian entries in Biology and Medicine with their English meaning. The book is well printed, very readable,

and on good paper with a cloth cover. Translators of Russian medical and biological writings to the English language will find the dictionary extremely useful.

STEREOSCOPIC ANATOMY

*The Thorax* is the fourth section of *A Stereoscopic Atlas of Human Anatomy* which is in full color and three dimensions. (16 mm.) *The Central Nervous System* (Section I), *Head and Neck* (Section II), and *Upper Extremity* (Section III) have previously appeared.

The high quality of work evidenced in previous sections is continued in Section IV, *The Thorax*.

With the Sawyer VIEWMASTER and these sections a physician can revisit the dissecting room time and time again and refresh his memory quickly on this complicated machine—MAN.

PROMOTED

The following officers have been promoted to the rank indicated by italics:

*Major General* James S. Cathroe, USAF (DC), Assistant for Dental Services in the Office of the Surgeon General, U. S. Air Force.

*Brigadier General* Richard L. Bohannon, USAF(MC), Surgeon, Fifth Air Force, Fuchi, Japan.

*Brigadier General* James G. Moore, USAF (MC), Surgeon Air Training Command, Randolph Air Force Base, Texas.



## AWARDS

Presented at Honors Night Dinner, 65th Annual Convention, Statler  
Hilton Hotel, Washington, D.C., November 19, 1958



LT. COL. CARL W. HUGHES, MC, USA

### WELLCOME AWARD

The Sir Henry Wellcome Medal and Prize is awarded annually through the Association of Military Surgeons of the United States by the Trustees of the Wellcome Foundation in London for the best essay on a military medical subject. The award consists of a Silver Medal, a scroll, and an honorarium of \$500. The winner of the 1958 award is Lieutenant Colonel Carl W. Hughes, Medical Corps, U. S. Army, Assistant Chief, Department of Surgery, and Chief of General Surgery Service, Tripler U. S. Army Hospital. The title of his winning essay is: "Vascular Surgery in the Armed Forces." This essay will be published in the January 1959 issue of *MILITARY MEDICINE*.

Lt. Colonel Hughes is a native of Emi-

nence, Mo. He received his medical degree from the University of Tennessee College of Medicine in 1944. In 1946 he was called to active duty with the Army. He served as a Resident in Surgery at Walter Reed Army Hospital from 1949 to 1952. He was Vascular Surgical Consultant to the Eighth U. S. Army and a member of the Surgical Research Team of the Army in Korea.

He is author and co-author of 40 publications primarily on trauma, acute vascular injuries, traumatic arteriovenous fistulas and aneurysms and portal hypertension.

HONORABLE MENTION in the contest for the Sir Henry Wellcome Medal and Prize was given to Captain C. Davis Belcher, MC, USNR, Assistant Chief of Surgery at the Veterans Administration Hospital, Wilmington, Delaware. His essay is entitled: "Man Must Breathe." This will be published in the February 1959 issue of *MILITARY MEDICINE*.



CAPT. C. DAVIS BELCHER, MC, USNR

## THE GORGAS MEDAL

The Gorgas Medal is awarded for distinguished work in preventive medicine for our Armed Forces. The award was established by Wyeth Laboratories of Philadelphia in memory of Major General William Crawford Gorgas whose work in preventive medicine made possible the construction of the Panama Canal. This award consists of a Silver Medal, a scroll, and an honorarium of \$500.

The winner of the 1958 Gorgas Medal is Lieutenant Commander John H. Ebersole, Medical Corps, U. S. Navy, Medical Officer of the nuclear-powered submarine *USS Seawolf*. The award was given for outstanding work in the field of radiobiology in connection with the U. S. Navy's submarine program. As the first physician trained by the Navy for duty with a nuclear-powered submarine, he organized the medical departments of the first two nuclear-powered submarines, *USS Nautilus* and *USS Seawolf*, and has shown that men may work, eat, and sleep in continuous proximity to a properly designed nuclear reactor for extended periods of time.



Official U. S. Navy Photo

LCDR JOHN H. EBERSOLE, MC, USN

Doctor Ebersole is a native of Sterling, Illinois and is a graduate of the Indiana University School of Medicine (1948). He has completed a course in Radiation Medicine at Duke University, and special work at Oak Ridge National Laboratory. He has attended the U. S. Navy's Deep Sea Diving School and has the designation of Submarine Medical Officer.

## THE MAJOR LOUIS LIVINGSTON SEAMAN PRIZE

This prize is made possible through funds left for that purpose with the Association of Military Surgeons of the United States by Major Louis Livingston Seaman, Surgeon of the First U. S. Volunteers. The prize is given for some notable article published in *MILITARY MEDICINE* during the year, and consists of a scroll and an honorarium of \$160.

The winner of the 1958 prize is Colonel Rollin L. Bauchspies, Medical Corps, U. S. Army, Commanding Officer of the U. S. Army Hospital, Neubrucke, Germany. His series of six articles entitled "The Courageous Medics of Anzio" was published in *MILITARY MEDICINE*, Volume 122, 1958.

Colonel Bauchspies is a native of Pennsylvania and a graduate of the University of Pennsylvania School of Medicine (1928). He entered the Army Medical Corps after graduation and has served continuously since. During World War II he was with the troops that made the landing in Africa on D-Day, November 8, 1942 at which time he was Commanding the 38th Evacuation Hospital. He established the first American Hospital in the Mediterranean Theater of Operations at St. Cloud, Algeria, on November 11, 1942. He was assigned as Surgeon of the VI U. S. Army Corps at Anzio on February 10, 1944 to succeed Colonel Jarret B. Huddleston who had been killed in action. In August 1944, he participated in the third D-day action when American troops landed in Southern France.

During the Korean Conflict Colonel Bauchspies served as Surgeon of the First



COL. ROLLIN L. BAUCHSPIES, MC, USA

Army Corps in Korea, as Surgeon, Headquarters Korean Communication Zone. In 1954, he became Deputy Chief Surgeon, Headquarters, Army Forces Far East. After a tour of duty in the United States he was transferred to his present command in July 1957.

#### THE STITT AWARD

This award is given to a member of one of the Federal Medical Services who has done some outstanding work in the field of antibiotics. The award was established in 1954 through the courtesy of Pfizer Laboratories, Division of Charles Pfizer and Company, Inc., Brooklyn, New York, and consists of life membership in the Association of Military Surgeons of the United States, a bronze plaque, and an honorarium of \$500.

The winner of the 1958 award is Captain George L. Calvy, Medical Corps, U. S. Navy, Chief of Medicine at the U. S. Naval Hospital, St. Albans, New York, for his clinical research in the field of antibiotics in combating staphylococcal pneumonia. Doctor Calvy is a native of Fond du Lac, Wisconsin, and a graduate of the Washington University School of Medicine, St. Louis, Mo. (1937).



Official U. S. Navy Photo

CAPT. GEORGE L. CALVY, MC, USN

A specialist in Internal Medicine, he was made Coordinator of Primaquine Anti-Malaria Program in the Western Pacific Area (Korea-Japan) from 1952-54. He is author of 25 professional papers on various subjects in internal medicine.

#### THE McLESTER AWARD

This award was established in 1954 by the J. B. Roerig Company Division, Charles Pfizer and Company, Inc., Brooklyn, New York, to honor the memory of Colonel James Somerville McLester, MC, USAR, Birmingham, Alabama. The award is presented to the person who is, or has been, at any time a commissioned officer, or of relative status, in the Federal Medical Services, and who has done some outstanding work in the field of Nutrition and Dietetics. The award consists of a bronze plaque and an honorarium of \$500.

The winner of the 1958 award was Colonel William H. Lawton, USAF (MC), Retired, who resided at 3301 North Indian River Drive, Fort Pierce, Florida. Colonel Lawton died Nov. 6, 1958.

Doctor Lawton was a native of Garnett,





Official U. S. Air Force Photo

COL. WILLIAM H. LAWTON, USAF (MC), RET.  
(Died Nov. 6, 1958)

South Carolina. He was a graduate of Clemson College, S.C. (B.S. in electrical engineering, 1918), and of the George Washington University School of Medicine (1927).



A. B. C. KNUDSON, M.D.

He served with the U. S. Navy during World War I. After receiving his medical degree he was commissioned in the Medical Corps of the Army and served with that branch of service until July 1949 when he was transferred to the U. S. Air Force Medical Service. He was retired for physical reasons in December 1957.

His meritorious work in the field of nutrition and dietetics took place while he was Surgeon, USAF Training Command, Waco, Texas. The indoctrination of the pilots and their families by Doctor Lawton who showed the value of proper diets resulted in a marked reduction of accidents due to pilot error.

#### THE FOUNDERS MEDAL

The Founders Medal is awarded by the Executive Council of the Association of Military Surgeons of the United States to members of the Association for meritorious service in the field of military medicine and for some notable work done for the Association.

The recipients of this medal and the scroll



Harris &amp; Ewing

W. EDWARD CHAMBERLAIN, M.D.



USPHS  
MED. DIR. BYRON J. OLSON, USPHS

which accompanies the medal are:

A. B. C. Knudson, M.D., Director, Physical Medicine and Rehabilitation Service, Veterans Administration, Washington, D.C. He was General Chairman of the 65th Annual Convention of our Association this year.

W. Edward Chamberlain, M.D., Special Assistant to the Chief Medical Director for Atomic Medicine, Veterans Administration, Washington, D.C. He was Chairman of the Scientific Program Committee of the 65th Annual Convention of our Association this year.

Colonel George B. Green, USAF (MC), Office the Surgeon General, U. S. Air Force, Washington, D.C. As Chairman of the International Delegates Committee for several years he has rendered outstanding service to our Association.

Med. Dir. Byron J. Olson, USPHS, Office of the Surgeon General, U. S. Public Health Service. As Chairman of the Professional Activities Committee which arranges for the post-convention events for the international delegates, he has in that capac-

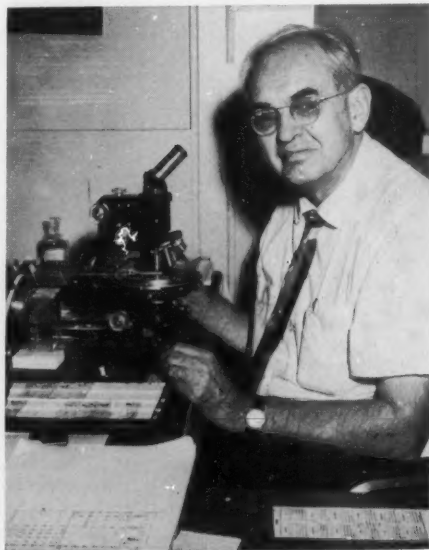


Official U. S. Air Force Photo  
COL. GEORGE B. GREEN, USAF (MC)

ity for the past several years rendered outstanding service to the Association.

#### THE SUSTAINING MEMBERSHIP AWARD

A recommendation of a committee from



RALPH D. LILLIE, M.D.

the Sustaining Members of our Association was made to the Executive Council after the 64th Annual Convention that there be established an award in the name of the Sustaining Members. At the March 1958 meeting of the Executive Council the recommendation was approved and the SUSTAINING MEMBERSHIP AWARD was established. The award consists of a scroll and an honorarium of \$500 and is to be given to any person in the Federal Medical Services who has made some outstanding contribution in the field of research.

The 1958 award which is the first to be presented was given to Ralph D. Lillie, M.D., Chief, Laboratory of Pathology and Histo-

chemistry, National Institutes of Health, Bethesda, Maryland.

The citation on the scroll reads: "In recognition of his many contributions to medicine through his work in experimental pathology over a period of thirty-seven years with the United States Public Health Service. He is author or joint author of monographs on experimental vaccinia, o-cresyl phosphate toxicology, psittacosis, tularemia, selenium toxicology, Rocky Mountain spotted fever, lymphocytic choric meningitis, and other scientific papers numbering over 200 in the field of experimental pathology of infectious and dietary diseases and poisoning and of histochemistry."



## OBITUARIES

### Brig. Gen. Rawley E. Chambers, U. S. Army, Ret.

Rawley E. Chambers, Brigadier General, MC, USA, Ret. (April 1955), died November 14 at Fort Sam Houston, Texas.

A native of Lakeview, Ohio, he received his medical degree from Ohio State University in 1926 and entered the military service in August of that year.

He served in the European Theater of Operations during World War II, and after the war became Chief of the Neuropsychiatric Service at Fitzsimons Army Hospital. At the time of his retirement he was Chief of the Professional Division in the Office of the Surgeon General of the Army.

General Chambers is survived by his wife, a son and a daughter.

Interment was at Fort Sam Houston, Texas.

### Brig. Gen. Henry C. Coburn, Jr., U. S. Army, Ret.

Henry Clay Coburn, Jr., Medical Corps, U. S. Army, retired, died at his home in Haddonfield, New Jersey, October 22, at the age of 79.

A native of Washington, D.C., General Coburn received his medical degree from the former Columbian College in the District of Columbia in 1903. He practiced medicine for several years before entering the Army Medical Corps in 1908.

During World War I he organized Base

Hospital 17 at Detroit and took it to Dijon, France. Later he became surgeon of Base Section 2, Bordeaux, and for his services to France was made a Chevalier in the Legion of Honor. He also held the Legion of Merit.

General Coburn served as chief of medical service at Walter Reed General Hospital from 1935 to 1939 and before that held similar posts at Fitzsimons General Hospital, Denver and the U. S. Army Hospital, Fort Sam Houston, Texas (now Brooke Army Hospital). From 1939 to 1945 he was surgeon at Fort Bragg, N.C., and after his retirement in 1946 moved to Haddonfield, N.J.

He is survived by his wife, Elma S. who resides at 274 Kings Highway E., Haddonfield, and two daughters. Interment was in Arlington National Cemetery.

### Maj. Gen. Stuart G. Smith, U. S. Army, Ret.

Stuart G. Smith, Major General, Medical Corps, U. S. Army, Ret., died November 19 at Fitzsimons Army Hospital.

General Smith was born in Springfield, Ill., and received his medical degree from Washington University, St. Louis, Mo., in 1924, and two years later entered on active duty with the Army. During World War II, he commanded Vaughn General Hospital before going to Europe. From 1946 to 1949 he was commanding officer of the Armed Services Medical Procurement Agency in Brooklyn, N.Y. Later he became Chief of the Supply Division in the Office of the Surgeon General of the Army.

He is survived by his wife and a son.

Interment was in Arlington National Cemetery.

## NEW BOOKS

Books may be ordered through the Association

- Cerebral Vascular Diseases*, Irving S. Wright, Clark H. Millikan, Grune & Stratton, New York, N.Y. Price \$4.00.
- Chemistry for Medical Technologists*, Charles E. Swiverd, The C. V. Mosby Company, St. Louis, Mo. Price \$10.75.
- Diagnostic Bacteriology*, Isabelle G. Schaub, A.B., M. Kathleen Foley, M.A., Elvyn G. Scott, M.T. (ASCP), W. Robert Bailey, Ph.D. The C. V. Mosby Co., St. Louis, Mo. Price \$4.75.
- Poisoning, A Guide to Clinical Diagnosis and Treatment*, W. F. von Oettingen, M.D., Ph.D., W. B. Saunders Company, Philadelphia, Pa. Price \$12.50.
- The Chemical Prevention of Cardiac Necroses*, Dr. Hans Selye, The Ronald Press Company, New York 10, N.Y. Price \$7.50.
- Urology in General Practice*, Frank Coleman Hamm, M.C., M.S., F.A.C.S., Sidney R. Weinberg, M.D., F.A.C.S., J. B. Lippincott Co., Philadelphia, Pa. Price \$6.00.
- Heredity of the Blood Groups*, Alexander S. Wiener, A.B., M.D., F.A.C.P., F.C.A.P., Irving B. Wexler, A.B., M.D., F.A.C.P., Grune and Stratton, Inc., New York, N.Y. Price \$6.00.
- Emergency War Surgery*, NATO Handbook, U. S. Armed Forces Issue of NATO Handbook Prepared for use by the Medical Services of NATO NATIONS, United States Department of Defense, Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. Price \$2.25.
- The Care of the Geriatric Patient*, Edited by E. V. Cowdry, Ph.D., Sc.D. (Hon.), The C. V. Mosby Company, St. Louis, Mo. Price \$8.00.
- Russian-English Biological & Medical Dictionary*, Dr. Eugene A. Carpovich, Technical Dictionaries Co., Box 144, New York 31, N.Y. Price \$12.00.
- The Divine Wind*, Rikihei Inoguchi, Tadashi Nakajima, Roger Pineau, United States Naval Institute, Annapolis, Maryland. Price \$4.50.
- The Eye—A Clinical and Basic Science Book*, E. Howard Bedrossian, M.D., M.Sc. (Med.), F.A.C.S., Charles C Thomas, Springfield, Illinois. Price \$11.00.
- Atlas of Technics in Surgery*, John L. Madden, M.D., F.A.C.S., Appleton-Century-Crofts, Inc., New York, N.Y. Price \$30.00.
- Psychological Stress*, Irving L. Janis, John Wiley & Sons, Inc., New York, N.Y. Price \$6.95.
- Emotional Problems of Childhood*, Edited by Samuel Liebman, M.D., J. B. Lippincott Company, Philadelphia, Pa. Price \$4.00.
- The Birth of Normal Babies*, Lyon P. Strean, Ph.D., D.D.S., F.A.P.H.A., Twayne Publishers, Inc., New York. Price \$3.95.





## BOOK REVIEWS

**ULCERATIVE COLITIS.** By Harry E. Bacon, B.S., M.D., ScD., LL.D., F.A.C.S., F.A.P.S., Professor and Head of Department of Proctology, Temple University Medical Center. 395 pages, 184 illustrations. J. B. Lippincott Company, Philadelphia and Montreal. Price \$15.00.

Since 1875 when Wilks and Moxan first described the pathology ulcerative colitis associated with a group of patients suffering from chronic diarrhea, this nonspecific, ulcerative disease of the large bowel has defied all attempts to determine its etiology or methods of cure. Neither the point of origin nor the pattern of development of this disease is consistent. The process of the disease may be insidious in onset and gradually subside, or may be fulminating and terminate fatally. It is this lack of uniformity that makes this disease so difficult to manage.

Based on an experience of over four hundred (400) cases under his care in the past sixteen (16) years and a careful review of all the available literature, the author has approached the problem of ulcerative colitis in a forthright and objective manner and has considered the disease from every angle. In so doing he has divided his discussion into many parts. Etiology is approached from the standpoint of infection, allergy, metabolic factors, neurogenic and psychogenic bases, collagen hypothesis and causes of exacerbation. The pathology of the disease is discussed as to its location and the changes observed grossly and microscopically. The relation of ulcerative colitis to pseudopolypoid and carcinoma is described in considerable detail. The symptoms associated with the disease and methods of diagnosis are presented with a view toward differentiating it from more specific entities.

Prior to reviewing the various methods of treatment of this disease he cites the many complications which may eventuate from this disease. Treatment is divided into the nonsurgical and surgical approach. He recognizes that approximately sixty (60) per cent of patients can be controlled by general medical management, but warns that these must be carefully watched for exacerbation of their symptoms and recrudescence of their disease. He also admits that emotional instability and psychiatric disturbances may be associated with this disease entity, but he insists that the organic aspects of chronic ulcerative colitis must be kept in focus.

The surgical treatment of this disease is divided into indications for surgery; ileostomy; vagotomy and pelvic neurectomy; and radical surgical pro-

cedures including one-stage ileostomy, total colectomy and proctectomy; and two-stage ileostomy and total colectomy. Then the author discusses the mortality, morbidity and complications of colectomy followed by anesthetic management in the surgery of ulcerative colitis and finally the preoperative and postoperative treatment of these cases.

In the author's series of four hundred and forty (440) patients with nonspecific ulcerative colitis, colectomy was performed in one hundred and eight (108) patients. In forty (40) patients a one-stage procedure was done, in thirty-eight (38) patients a two-stage procedure was performed, and in nine (9) patients a three-stage approach was used. On the basis of these statistics the author concludes that when surgery is indicated the rectum should be removed whenever disease is evident. When the rectum and sigmoid are free from disease a subtotal colectomy with end-to-end anastomosis of the ileum to the lower sigmoid is indicated. Invasion of the rectum and colon makes their removal imperative. When the latter procedure is indicated, a one-stage ileostomy and colectomy is, in the hands of the author, the operation of choice.

This book is the most exhaustive report of the subject in the literature. It is extremely well documented by statistics and illustrations covering most every phase of this perplexing disease. Because of its extensive coverage and factual presentation, the book is recommended to surgeons, internists, pediatricians, and in fact all physicians and students of medicine who recognize the need for opening up still uncharted seas of medical knowledge.

COL. DOUGLAS B. KENDRICK, MC, USA

**BONE AND RADIOSTRONTIUM.** By A. Engstrom, R. Björnerstedt, C. J. Clemenson, and A. Nelson, Karolinska Institute, Stockholm. 139 pages, illustrated. John Wiley & Sons, Inc., New York. Price \$8.75.

Among the numerous radioisotopes contained in fallout in nuclear reactors, radiostrontium has been of particular interest and widely publicized. This derives naturally by reason of its abundance, long half-life and bone-seeking proclivities. It poses a long range hazard and the evaluation of its effects is of much more than academic interest.

This little volume provides a good background of basic data and methods for calculating dose rates from beta emitters such as  $\text{Sr}^{90}$ , discusses the distribution of mineral salts in bone and the ultrastructure of bone tissue. The data on Strontium includes, of course, its metabolic features and pref-

erential location in the skeleton with ample illustrations. A tabulation of physical and biological data of the bone-seeking radioisotopes is included.

Evaluation in terms of probable future effects on the human race is not considered and that is, of course, still highly speculative in any event.

The principal value of the book lies in providing valuable basic information and methods with detailed mathematical approach for those interested in research in the field.

REAR ADMIRAL CHARLES F. BEHRENS, USN, RET.

#### MEDICAL JURISPRUDENCE AND TOXICOLOGY. 10th Ed.

By John Glaister, J.P., D.Sc., M.D., F.R.S.E., F.R.F.P.S. (Glasg.); in collaboration with Edgar Bentoul, M.B.E., M.A., LL.B., M.B., Ch.B. Regius Professor of Forensic Medicine, University of Glasgow, and Lecturer in Forensic Medicine, University of Glasgow. 225 illustration, 72 in color. 720 pages. The Williams & Wilkins Co., Baltimore, exclusive U. S. agents. Price \$10.00.

Every pathologist who performs autopsies will benefit from reading this book as will also the general practitioner for it is usually the general practitioner who first sees the body in cases of death from unnatural as well as natural causes. And the examination of the body and its surroundings when first discovered is of first importance.

Since the authors are from Glasgow, Scotland, discussions of medical jurisprudence relate to the laws of Scotland and England but laws of the United States are based on English law and differences are mostly unimportant.

The first chapter gives a good account of the practice of medicine in Great Britain under the National Health Services Acts. The second chapter contains a discussion of medical evidence and professional secrecy and privilege. Other chapters cover identification; determination of age and sex; estimation of the time of death and changes seen in death due to various causes such as asphyxia, hanging, suffocation, drowning, strangulation, starvation, burns and electricity. A chapter is devoted to the medico-legal aspects of wounds and another describes the examination of blood stains. Other subjects include the medico-legal aspects of sexual functions, criminal abortions, infanticide, rape and other sexual crimes, and insanity. Six of the 26 chapters are devoted to poisoning with a description of the symptoms, treatment and post-mortem appearance. An appendix gives a brief description of tests for various poisons.

The book contains frequent illustrative accounts of various crimes which make interesting reading and it has an easy style.

COL. HUGH R. GILMORE, JR., USA, RET.

ORTHOPEDICS FOR THE GENERAL PRACTITIONER. By William E. Kenney, M.D., Orthopedic Surgeon, Truesdale Hospital, Fall River, Mass.; and Carroll B. Larson, M.D., F.A.C.S., Professor of

Orthopedic Surgery and Chairman of Dep't. of Orthopedic Surgery, State University of Iowa. 413 pages, illustrated. The C. V. Mosby Company, St. Louis. Price \$11.50.

This book should be very useful for those practitioners who see orthopaedic cases. That includes a larger field than one would at first consider. The internist, the pediatrician, the general surgeon and of course the general practitioner would all be interested in this book. This reviewer also thinks that orthopaedic surgeons would enjoy the concise review. Each orthopaedic situation is carefully outlined. The symptoms, diagnoses and treatment are given in concise, accurate manner.

The book is well arranged. Not only are disabilities of childhood and adult life classified but they are also listed according to anatomical location. Arthritis, unusual diseases of the bone, tumors involving the bone are covered adequately.

This book is highly recommended.

W. COMPERE BASOM, M.D., M.S. (OR.)

#### PREVENTIVE MEDICINE FOR THE DOCTOR IN HIS COMMUNITY. 2nd Ed. An Epidemiologic Approach.

By Hugh Rodman Leavell, M.D., Dr. P. H., Professor of Public Health Practice, Head of the Department of Public Health Practice, Harvard School of Public Health; and E. Gurney Clark, M.D., Dr.P.H., Professor of Epidemiology, Head of the Division of Epidemiology, School of Public Health and Administrative Medicine of the Faculty of Medicine, Columbia University; and Nineteen Contributors. 689 pages. The Blakiston Division, McGraw-Hill Book Co., Inc., New York, Toronto, and London. Price \$10.00.

This second edition more aptly titled than the first edition (Textbook of Preventive Medicine) is a distinct contribution to the rapidly expanding knowledge of public health. There is little doubt that as preventive medicine and the allied sciences of public health expand into the specialty fields, the now too frequent submarginal delineations and chasms between clinical and public health practice will lessen. Regardless of ones specialty, this book should bring a closer unity of the disciplines of medicine in their relation to private and community medical affairs.

The contents with its epidemiological and philosophical approach should be readily acceptable to the Armed Forces medical officer, public health physician and pediatrician. However, the private physician and specialists will find the greatest use for this volume.

The senior authors have achieved excellence in coordinating the work of 19 contributors. The references have been chosen well and are current. This book should open up new doors and vistas in the practice of community medicine.

T. E. PATTON, JR., M.D., M.P.H.

**PHARMACOLOGY IN MEDICINE.** 2nd Ed. 86 contributors. Edited by Victor A. Drill, Ph.D., M.D., Lecturer in Pharmacology, Northwestern University Medical School. 1243 pages. McGraw-Hill Book Company, Inc., New York, Toronto, London. Price \$19.50.

Drugs are usually considered to be chemical agents which initiate or alter physiologic responses of biological systems. Much of the current edition is devoted to wider knowledge of biological systems in general and to the newer drugs in particular. New data on old drugs have been streamlined and modernized with current pharmacological philosophy and practice. Obsolete agents have been de-emphasized or eliminated.

The newer drugs are presented in their various available forms with emphasis on the effects of such agents in and on the body as a whole. The mechanism of their actions is spelled out in detail and their therapeutic application and contraindications emphasized. Equivalent trade names have been included in order to avoid confusion. Side effects and toxicity are stressed to mitigate iatrogenic disease.

A whole new section is devoted to the subject of "psychopharmacology" which is the study of drugs affecting behavior. This chapter describes that branch of pharmacology concerned with the psychologic action of certain drugs in modifying the mood of wild animals or disturbed patients, exerting a taming or calming effect. The discourse pertains to the autopharmacology of brain, psychotomimetic medicines, psychomotor stimulants and the ataractic agents, better known as tranquilizers. This part alone is worth the price of the book.

This tome is written by pharmacologists (as it should be) primarily for other pharmacologists (as it must be), because no clinician could possibly encompass or even grasp the extent of the mental discipline, physiological approach and technical skills required to master the field of modern pharmacology. To do so would devour his time and interest and demand the sacrifice of his clinical pursuits.

For medical students this book is a top-flight text; for physicians, it is a reference book of great authority; for the pharmaceutical industry (often considered the "arsenal of modern medi-

cine") this collaborative volume will be a bonanza in more ways than one.

CAPT. C. C. SHAW, MC, USN

**REHABILITATION OF THE CARDIOVASCULAR PATIENT.**

By Paul Dudley White, M.D., Howard A. Rusk, M.D., Philip R. Lee, M.D., and Bryan Williams, M.D. 176 pages, illustrated. McGraw-Hill Book Company, Inc., New York, Toronto, London. Price \$7.00.

This is a timely text devoted to a subject that is becoming of increasing importance in current medical management. One could hardly choose men better qualified to write instructively and authoritatively on this subject than the collaborators of this book.

Preceding the meaty portions of the book is an esoteric chapter on historical development of rehabilitation with a tribute to faith healing by lauding its successes while omitting any mention of its failures. The value of restoring and sustaining the ego of cardiovascular patients in bringing about overcompensation is emphasized.

Following a brief review of the practical side of cardiovascular disease and its contemporary significance, a very lengthy chapter is devoted to cerebro-vascular disease. Detailed methods of examination, recording therapeutic management and rehabilitation in all spheres—physical, psychologic, economic and social are skillfully presented. All 31 illustrations in the book are found in this chapter.

The book concludes with several short chapters on rehabilitation as it applies to cardiac disease of various etiology. A particularly sensible section is written on hypertension and hypertensive heart disease. Each chapter is provided with a very extensive list of references to current literature. Appropriate tribute is paid to those industrial physicians who have made industrial medicine a boon to both management and labor and the patients of these groups.

This book, which overrates the value of wearing rose-colored glasses, should be of particular value and interest to those medical officers serving on evaluation and review boards, at industrial establishments, internists, generalists, and neuropsychiatrists.

CAPT. JULIAN LOVE, USN, RET.



# MILITARY MEDICINE

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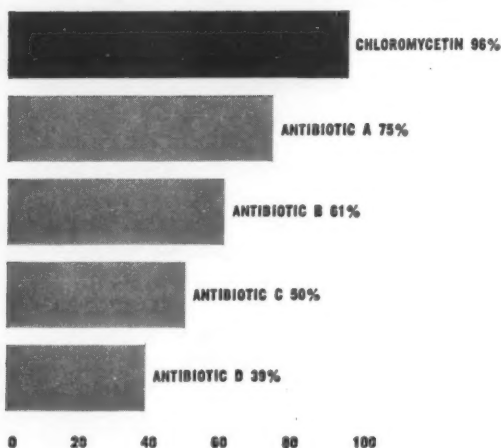
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\*Adapted from Godfrey, M. E., & Smith, I. M.: *J.A.M.A.* 166:1197, 1958. Staphylococci studied were strains isolated from infections of 28 general hospital patients.

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"... this drug [Adrenosem Salicylate] is a valuable aid to plastic surgery in its ability

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1. Orzac, E.: Medical Care of the Child Patient Before and After Adenoidectomy and Tonsillectomy, N.Y. State J. Med. 56:886 (Mar., 1956).
2. Ersner, M.S. and Lerner, S.S.: M. Clin. North America 40:1749 (Nov., 1956).
3. Peele, J.C.: Adrenosem in the Control of Hemorrhage from the Nose and Throat, A.M.A. Arch. of Otolaryng. 61:450 (Apr., 1955).
4. Dennehy, P.J.: The Care of the Prostatic Cavity, South African Med. 30:21 (Apr., 1956).
5. Brown, W.S.: The Use of Adrenosem Salicylate to Control Post-operative Bleeding in Plastic Surgery: Dermabrasion, Northwest Med. 57:470 (Apr., 1958).

6. Perkins, R.E.L.: A Clinical Investigation of Adrenochrome Monosemicarbazone Sodium Salicylate, Oral Surg., Oral Med., Oral Path. 10:230 (Mar., 1957).
7. Brode, A.B. and Chianese, T.C.: A Clinical Evaluation of Adrenosem Salicylate. Ann. of Dentistry 15:56 (Sept. 1956).
8. Zubieta, C.B. and Escanaverino, R.B.: Adrenosem for the Prevention of Bleeding in Tonsillectomy, Am. Pract. 3:385 (Mar., 1957).
9. Riddle, A.C., Jr.: Adrenosem Salicylate: A Systemic Hemostat, Oral Surg., Oral Med., Oral Path. 6:617 (June, 1955).



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# MILITARY MEDICINE

(Formerly THE MILITARY SURGEON)

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### References:

1. Boland, E. W.: California Med. 88:417 (June) 1958. 2. Bunim, J. J., et al.: Arthr. & Rheum. 1:313 (Aug.) 1958.
3. Boland, E. W., and Headley, N. E.: Paper read before the Am. Rheum. Assoc., June 21, 1958, San Francisco, Calif.
4. Bunim, J. J., et al.: Paper read before the Am. Rheum. Assoc., June 21, 1958, San Francisco, Calif.

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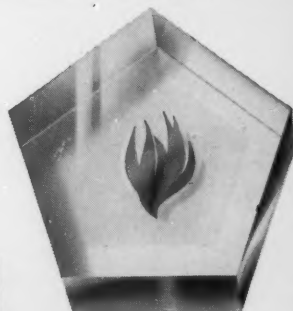
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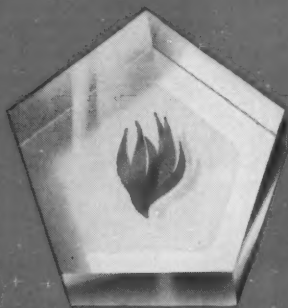
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REFERENCES: 1. Carlozzi, M.: *Ant. Med. & Clin. Therapy* 5:146 (Feb.) 1958. 2. Welch, H.; Wright, W. W., and Staffa, A. W.: *Ant. Med. & Clin. Therapy* 5:52 (Jan.) 1958. 3. Marlow, A. A., and Bartlett, G. R.: *Glucosamine and Leukemia*. *Proc. Soc. Exp. Biol. & Med.* 84:41, 1953. 4. Shalowitz, M.: *Clin. Rev.* 1:25 (April) 1958. 5. Nathan, L. A.: *Arch. Pediat.* 75:251 (June) 1958. 6. Cornbleet, T.; Chesrow, E., and Barsky, S.: *Ant. Med. & Clin. Therapy* 5:328 (May) 1958. 7. Stone, M. L.; Sedlis, A., Bamford, J., and Bradley, W.: *Ant. Med. & Clin. Therapy* 5:322 (May) 1958. 8. Harris, H.: *Clin. Rev.* 1:15 (July) 1958.



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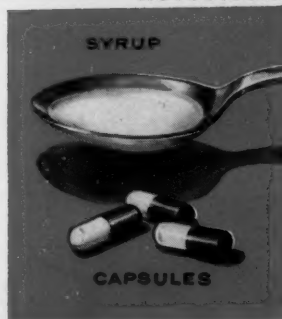
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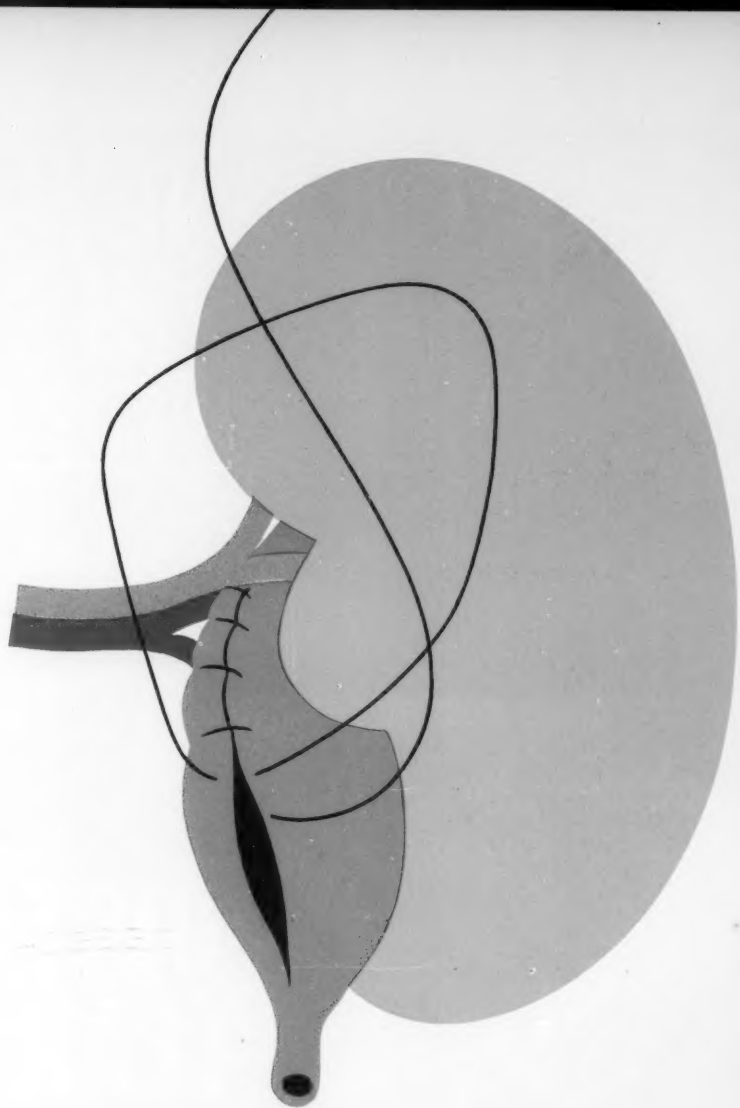
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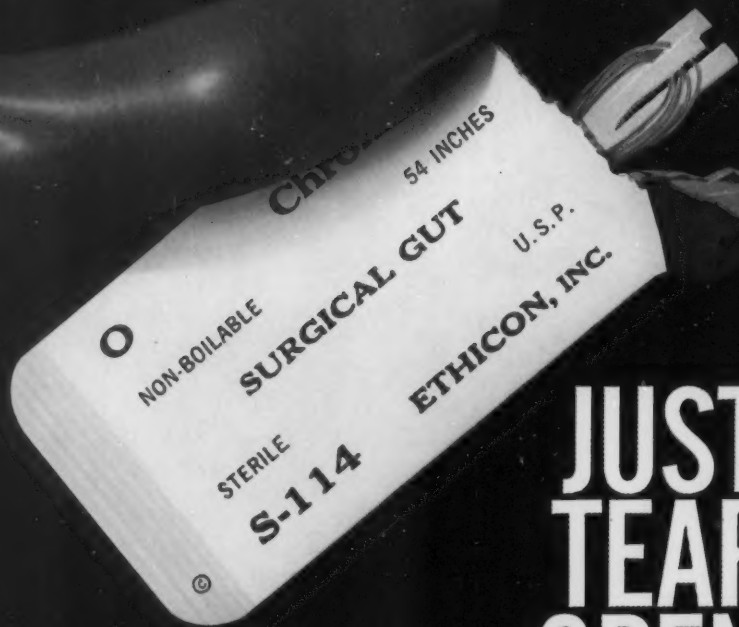


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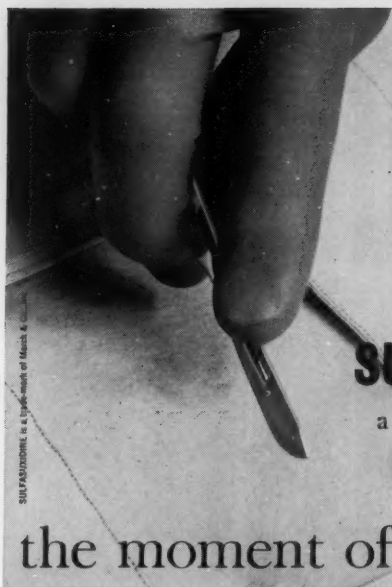
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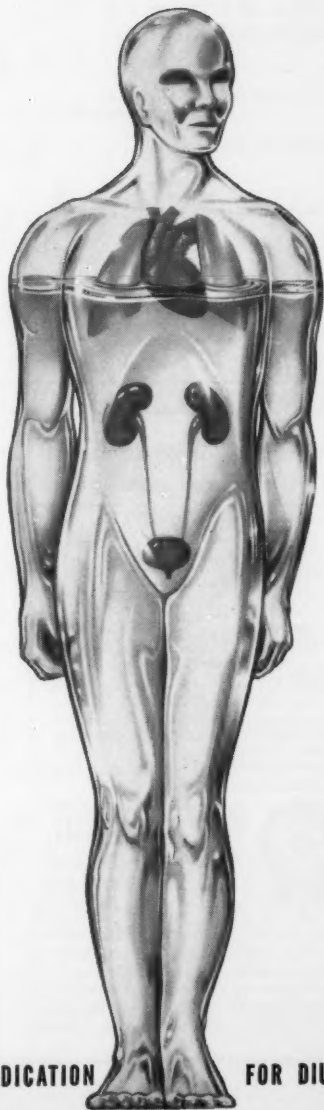
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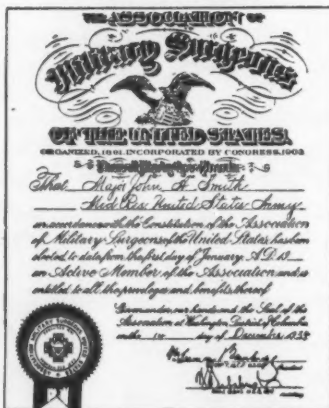
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Sarnoff, J. J.: Freedman, M. A., and Hyman, A. A.: J. Urol. 55:417-427 (April) 1946. Schnitzer, R. J., and Schleyer, W. L.: In press. Haines, W. H., and Miceli, S.: Pennsylvania M. J. 50:1328-1330 (Sept.) 1947. Narsing, L.: J. Urol. 59:92-95 (Jan.) 1948. Rodgers, R. S., and Colby, F. H.: J. Urol. 59:659-663 (April) 1948. Sarnoff, J. J.: Proc. Soc. Exper. Biol. & Med. 68:23-26 (May) 1944. Studdiford, W. E.: Surg. Clin. North America 34:293 (April) 1952. Rhoads, P. S.; Svee, F. A., and Rohr, J. H.: J. Lab. & Clin. Med. 32:1530-1531 (Dec.) 1947. Lazarus, J. A.: M. Clin. North America 32:1445-1425 (Sept.) 1948. Scholl, A. J.; Hinman, F.; Crowley, E.; Hepler, A. B.; Gutierrez, R.; Thompson, G. J.; Cook, E. N., and O'Connor, V. J.: Arch. Surg. 57:699-728 (Nov.) 1948. Ferguson, J. D.; Reinold, D. G., and Wrigley, F.: Lancet 2:909-911 (Dec. 18) 1948. Wilhelm, S. F., and Orkin, L. A.: J. Urol. 61:131-139 (July) 1949. Rhoads, P. S.; Svee, F. A., and Rohr, J. H.: Quart. Bull., Northwestern Univ. M. School 23:104-111 (Spring) 1949. Lazarus, J. A., and Schwarz, L. H.: J. Urol. 61:649-657 (March) 1949. Schiffrin, M. J.: Modern Hosp. 72:104, 106, 108, 110 (March) 1949. Rhoads, P. S.; Svee, F. A., and Rohr, J. H.: Mississippi Valley M. J. 71:87-89 (May) 1949. Schweinburg, F. B., and Rutenberg, A. M.: Proc. Soc. Exper. Biol. & Med. 71:20-23 (May) 1949. Rhoads, P. S.; Svee, F. A., and Rohr, J. H.: Proc. Inst. Med. Chicago 17:356 (June 15) 1949. Brickhouse, R. L.; Lepper, M. H.; Stone, T. E., and Dowling, H. F.: Am. J. Med. Sc. 218:133-137 (Aug.) 1949. Carroll, G.; Allen, H. N., and Flynn, H.: Urol. & Cutan. Rev. 53:677-683 (Nov.) 1949. Wilhelm, S. F.; Schloss, W. A.; Orkin, L. A.; Seligmann, E., and Wassermann, M.: J.A.M.A. 141:837-839 (Nov. 19) 1949. Herring, A. L.: Mississippi Doctor 27:329 (Dec.) 1949. Thompson, H. T.: J. Urol. 62:892-899 (Dec.) 1949. Carroll, G.; Allen, H. N., and Flynn, H.: J. Urol. 62:85-86 (Jan. 14) 1950. Langemann, H.: Schweiz. med. Wchnschr. 80:78-81 (Jan. 20) 1950. Birchall, R., and Alexander, J. E.: Medicine 29:1-28 (Feb.) 1950. Herrold, R. D.: S. Clin. North America 30:61-69 (Feb.) 1950. Burns, E. J.: Omaha Med. West. Clin. Soc. 11:37-45 (April) 1950. Robbins, J. J.: Kentucky M. A. 56:47 (Jan.) 1950. Plicht, A.: Presse Med. 58:495 (April 29) 1950. Bigler, J. A., and Thompson, O.: Am. J. Dis. Child. 79:739-740 (May) 1950. Howard, F. S.: Stanford M. Bull. 8:66-72 (May) 1950. Anonymous: Southwest. Med. 31:178 (June) 1950. Gloor, H.: Urol. Praxis 39:687-689 (Aug. 10) 1950. Carroll, G.; Allen, H. N., and Flynn, H.: Postgrad. Med. 8:312-316 (Oct.) 1950. Weir, A. B., Jr.: South. M. J. 43:868-871 (Oct.) 1950. Hess, E.; Roth, R. B., and Kaminsky, A. F.: J.A.M.A. 144:601-605 (Oct. 21) 1950. Stewart, B. L., and Lash, J. J.: J. Urol. 64:801-810 (Dec.) 1950. McGee, L. E., and Schneberg, A.: J. Internat. Coll. Surgeons 14:721-725 (Dec.) 1950. Thompson, R. F.: Southwest. Med. 31:403-409 (Dec.) 1950. Hinman, F., Jr.: Ann. West. Med. & Surg. 4:829-833 (Dec.) 1950. Becker, H.: Med. Monatsschrift 75:786-787, 1951. Flint, L. D.: S. Clin. North America 31:3:681 (June) 1951. Cummings, R. H.: Arizona Med. 8:28-33 (July) 1951. Duffy, D. B.: M. J. Australia 2:107 (July) 1951. Anonymous: Am. Pharm. 17:726-727, 751 (Aug.) 1951. Carroll, G., and Brennan, R. V.: J. Florida M. A. 38:257-259 (Oct.) 1951. Renshaw, J. E.: J. Am. M. Women's A. 6:438-439 (Nov.) 1951. Carroll, G., and Brennan, R. V.: South. Med. & Surg. 113:358 (Nov.) 1951. Baird, S. S.: Am. Pract. & Digest Treat. 2:1038-1041 (Dec.) 1951. Colston, J. A. C.: West Virginia M. J. 47:377-383 (Dec.) 1951. Rhoads, P. A.; Billings, C. E., and Adair, D. M.: (Proc. Central Soc. Clin. Res., 24th Ann. Meet., Chicago, Nov. 2-3 1951.) J. Lab. & Clin. Med. 38:942 (Dec.) 1951. Garvey, F. K., and Cline, W. A.: Urol. & Cutan. Rev. 56:23-24 (Jan.) 1952. Hinman, F., Jr.: Calif. Med. 76:1-7 (Jan.) 1952. Rhoads, P. S.; Billings, C. E., and O'Connor, V. J.: J.A.M.A. 148:165-170 (Jan. 19) 1952. Carroll, G., and Brennan, R. V.: J. Florida Med. Assoc. 38:257 (Oct.) 1951. Amer. Pract. & Digest Treat. 3:160 (Feb.) 1952. Richardson, E. J., in Conn. H. S., Ed.: Current Therapy 1957, Philadelphia, W. B. Saunders Co., 1957 p. 330. Womack, C. R.; Jackson, G. C.; Cooke, T. M.; Kass, E. H.; Haight, H., and Finland, M.: Arch. Int. Med. 89:240-256 (Feb.) 1952. Baker, R.: Surg. Clin. North America 32:311-323 (Feb.) 1952. Kimbrough, J., and Moore, W. H.: Mil. Surg. 110:177-180 (March) 1952. Raabe, S.: Die. Med., Stuttgart (1) p. 282, (March 1) 1952. Royce, R. K.: Bull. St. Louis M. Soc. 46:457-458 (March 21) 1952. McMartin, W. J., and Milam, D. F.: J.A.M.A. 148:1117-1121 (March 29) 1952. Weisbrein, B. A., and Carr, C.: Am. J. M. Sc. 223:418-421 (April) 1952. Secretan, M.: Schweiz. med. Wchnschr. 82:345-350 (April 5) 1952. Ney, C., and Markham, M. J.: New York State J. Med. 52:1033-1035 (April 15) 1952. Secretan, M.: Schweiz. med. Wchnschr. 82:453-456 (April 19) 1952. Abruzzi, W. A.: Tulst. Med. J. 19:15-19 (May) 1952. Bourgeois, G. A.: Am. J. Surg. 83:671-673 (May) 1952. Carroll, G., and Brennan, R. V.: J. Internat. Coll. Surg. 17:809-813 (June) 1952. Lazarus, J. A., and Wood, W. A.: Am. Pract. & Digest Treat. 3:445-453 (June) 1952. Carroll, G., and Brennan, R. V.: J. Urol. 68:88-95 (July) 1952. Schoonover, F. S., Jr.: M. Times 80:425-430 (July) 1952. Singer, P. L.: Clin. Med. 59:317-320 (July) 1952. Prentiss, R. J.; Mullenix, R. B., and Whiseand, J. M.: Calif. Med. 77:7-11 (July) 1952. Yow, E. M.: J.A.M.A. 149:1184-1188 (July 26) 1952. Oserman, K. E., and Leiter, H. E.: J. Mt. Sinai Hosp. 19:421-427 (July-Aug.) 1952. Creevy, C. D.: J. Lancet 72:353-356, 363, 390 (Aug.) 1952. Bush, W. L.: South. M. J. 45:870-874 (Sept.) 1952. Land-



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better, W. F., and Woodruff, L. M.: *M. Clin. North America* 36:1421-1433 (Sept.) 1952. Jeghers, H.: *G.P.* 6:72-83 (Sept.) 1952. Creevy, C. D.: *Surgery* 32:749-756 (Oct.) 1952. Lattimer, W. H., and Leberman, F. R.: *Clin. Med.* 5:313 (March) 1952. Creevy, C. D., and Tichy, F. Y.: *Arch. Neurol. & Psychiat.* 68:537-548 (Oct.) 1952. Anonymous: *M. Times* 80:666-681 (Nov.) 1952. Johnston, D. H.: *Arch. Int. Med.* 90:711-717 (Nov.) 1952. Kreitzer, H.: *Wiener klin. Wchnschr.* 121:369, 1952. Nesbit, R. M., and Baum, W. E.: *J.A.M.A.* 150:1459-1462 (Dec. 13) 1952. O'Connor, V. J.: *Proc. Inst. Med.* Chicago 19:187-199 (Dec. 15) 1952. Taylor, W. N., and Taylor, J. N.: *J. Urol.* 64:659-660 (Sept.) 1952. Drummond, A. C.: *Geriatrics* 6:27-32 (Jan.) 1953. Waishren, B. A.: *Arch. Int. Med.* 91:138-141 (Jan.) 1953. Barnard, D. M.: *Story, R. D., and Root, H. F.: New Eng. J. of Med.* 248:136-141 (Jan. 22) 1953. Chen, J. Y. P.; Priddle, O. D.; Crawford, J., and Boschetti, R.: *Fed. Proc.* 12:(part 1) 309-310 (March) 1953. Singer, P. L.: *Clin. Med.* 60:204-208 (April) 1953. O'Connor, V. J.: *Urol. Surv.* 3:75-86 (April) 1953. Baty, J. M.: *Nebraska State M. J.* 37:293-296 (Sept.) 1952. Colby, F. H.: *New England J. Med.* 248:682-689 (April 16) 1953. O'Connor, V. J., and Rhoads, P. S.: *J. Am. Geriatrics Soc.* 1:355-361 (May) 1953. Everett, H. S., and Brack, C. B.: *Obst. & Gynec.* 1:571-578 (May) 1953. Hubbell, R. J.: *J. Michigan St. Med. Soc.* 51:1433 (Nov.) 1952. Brown, E. W.: *South. M. J.* 46:689-691 (July) 1953. Burns, E.: *Southwest. Med.* 34:248-251 (July) 1953. Rhoads, P. S.; Billings, C. E., and Adair, D. M.: *Antibiotics & Chemotherapy* 3:721-730 (July) 1953. Yow, E. M.: *Amer. Pract. & Jour. of Treatment* 4:521-525 (Aug.) 1953. Eisenberg, G. M.; Alexander, J. D., Jr., and Flippin, H. F.: *J.A.M.A.* 152:1302-1304 (Aug. 1) 1953. Herrell, W. E.; Nichols, D. R., and Martin, W. J.: *J.A.M.A.* 152:1601-1606 (Aug. 22) 1953. Lawson, W. G.: *J. Pediat.* 43:263-266 (Sept.) 1953. Chapell, B. S.: *M. Times* 81:682-686 (Oct.) 1953. Mulholland, S. W.; Kavjian, E. M., and Madonna, H. M.: *J. Am. Women's A.* 8:393-392 (Dec.) 1953. Raabe, S.: *J.A.M.A.* 149:712 (June 16) 1952. Strauss, R.: *Wien. klin. Wchnschr.* 1009-1011 1953. Litner, S.: *Aritl. Pract.* 7, Nr. 7, 1 and 11, 1953. Berning, H.: *Therap. Gegenw.* 92:1, 5-9, 1953. Carroll, G.; Brennan, R. V., and Allen, H.: *Chicago M. Soc. Bull.* 56:626-630 (Feb. 13) 1954. Parker, D.: *J.A.M.A.* 154:972-974 (March 20) 1954. Everett, H. S., and Long, J. H.: *Am. J. Obst. & Gynec.* 67:916-936 (April) 1954. Nunziante, L.: *Riforma Medica (Ital)* Nr. 31, 1953. Creevy, C. D., and Feeney, M. J.: *J. Urol.* 71:615-623 (May) 1954. Finn, J. J., and Clarke, B. G.: *Bull. New England M. Center* 16:164-70 (June) 1954. Pisciotta, A. V.; Hinz, J. E., and Hirschboeck, J. S.: *J. Urol.* 71:768-770 (June) 1954. Lattimer, J. K.: *Bull. New York Acad. Med.* 30:544-547 (July) 1954. Howard, D. E.: *J. Iowa State M. Soc.* 44:281-284 (July) 1954. Creevy, C. D.: *Postgrad. Med.* 16:359-363 (Oct.) 1954. Montgomery, T. R.: *S. Clin. North America* 34:1435-1451 (Oct.) 1954. Collier, E. J.; Howard, T. L.; Lipscomb, J. M.; Buchtel, H. A., and Ivers, W. M.: *Rocky Mountain M. J.* 51:888-891, 896 (Oct.) 1954. Cross, R. R., Jr.; Hufschmidt, J. R., and Gates, L. E.: *J. Urology* 72:969-974 (Nov.) 1954. Hughes, J.; Copridge, W. M., and Roberts, L. C.: *South. M. J.* 47:1082-1085 (Nov.) 1954. Creevy, C. D., and Price, W. E.: *J. Urol.* 72:No. 6, 1233-1237 (Dec.) 1954. Phillips, C. A. S., and Lloyd, F. A.: *J. Urol.* 72:1247-1254 (Dec.) 1954. Malui, N. S. R.: *J. Urol.* 72:1104-1136 (Dec.) 1954. Balch, H. H.: *Mil. Surgeon* 115:419-426 (Dec.) 1954. Strawcutter, R. E.: *North Carolina Medical J.* 16:No. 2, 63-64 (Feb.) 1955. Shoemaker, W. C.; Ulin, A. W.; May, H. D., and Martin, W. L.: *Ann. Surg.* 140:832-838 (Dec.) 1954. Garvey, F. K., and Lancaster, J. M.: *North Carolina M. J.* 18:78 (Feb.) 1957. Thompson, C. J.: *Trans. Am. Assoc. Genito-Urinary Surgeons* 16:166, 1954. Marks, R. G.; Ravich, L., and Wilhelm, S. F.: *J. Urol.* 72:179-181, No. 1 (Jan.) 1955. Harris, J. A., and Vest, S. A.: *Postgrad. Med.* 17:58-65 (Jan.) 1955. Garvey, F. K., and Strawcutter, R. E.: *North Carolina Medical J.* 16:No. 2, 63-64 (Feb.) 1955. Carroll, G.: *J. Urol.* 73:609-612 (March) 1955. Clapper, W. E.; Burdette, R. L., and Plank, L. E.: *Bact. Proc.* 80-81, 1955. Sterrett, H. W., Jr.: *J. Am. Osteopath.* A. 54:475-479 (April) 1955. Kass, E. H.: *Am. J. Med.* 18:764-781 (May) 1955. Marquardt, C. R.: *Clin. Med.* 62:575-581 (June) 1955. Moul, W. J.: *GP* 12:103-109 (July) 1955. Taylor, R. D.: *M. Clin. North America* 29:957-963 (July) 1955. Burdette, R. L.; Plank, L. E., and Clapper, W. E.: *Antibiotics & Chemother.* 5:392-397 (July) 1955. Saelhof, C. C.: *Am. J. Digest Dis.* 22:204-206 (July) 1955. Yow, E. M.: *Ann. Int. Med.* 43:323-332 (Aug.) 1955. Sanford, J. P., and Balch, H. M.: *Clin. Med.* 62:797-801 (Aug.) 1955. Bunn, P. A.; Dutton, R.; Berg, G., and Black, M.: *New York State J. Med.* 55:2337-2360 (Aug. 15) 1955. Joron, G. E.; De Vries, J.; Reid, G.; Mathews, W. H., and McKay, J. W.: *Diabetes* 4:99-103 (March-April) 1955. Young, E. R., and Clancy, F.: *M. Clin. North America* 29:1665-1670 (Nov.) 1955. Raabe, S., and Albrecht, T.: *Deutsche med. Wchnschr.* 80:1730-1732 (Nov. 25) 1955. Clapper, W. E., and Plank, L. E.: *J. Urol.* 75:339-341 (Feb.) 1956. Winer, J. H.: *California Med.* 84:204-205 (March) 1956. Creevy, C. D.: *Minnesota Med.* 39:281-284, 306 (May) 1956. Nunziante, L.: *Riforma Medica* 67:859-862, 1953. Hughes, J.; Copridge, W. M., and Roberts, L. C.: *North Carolina M. J.* 17:320-324 (July) 1956. Campbell, M. F.: *Modern Med.* 24:85-91 (Nov. 15) 1956. Bernard, J. A.: *Southwestern Medicine (Texas)* 37:88, 1956. Bayer, H.: *Aerztliche Praxis (Dtschl.)* 8:Nr. 29, 1956.

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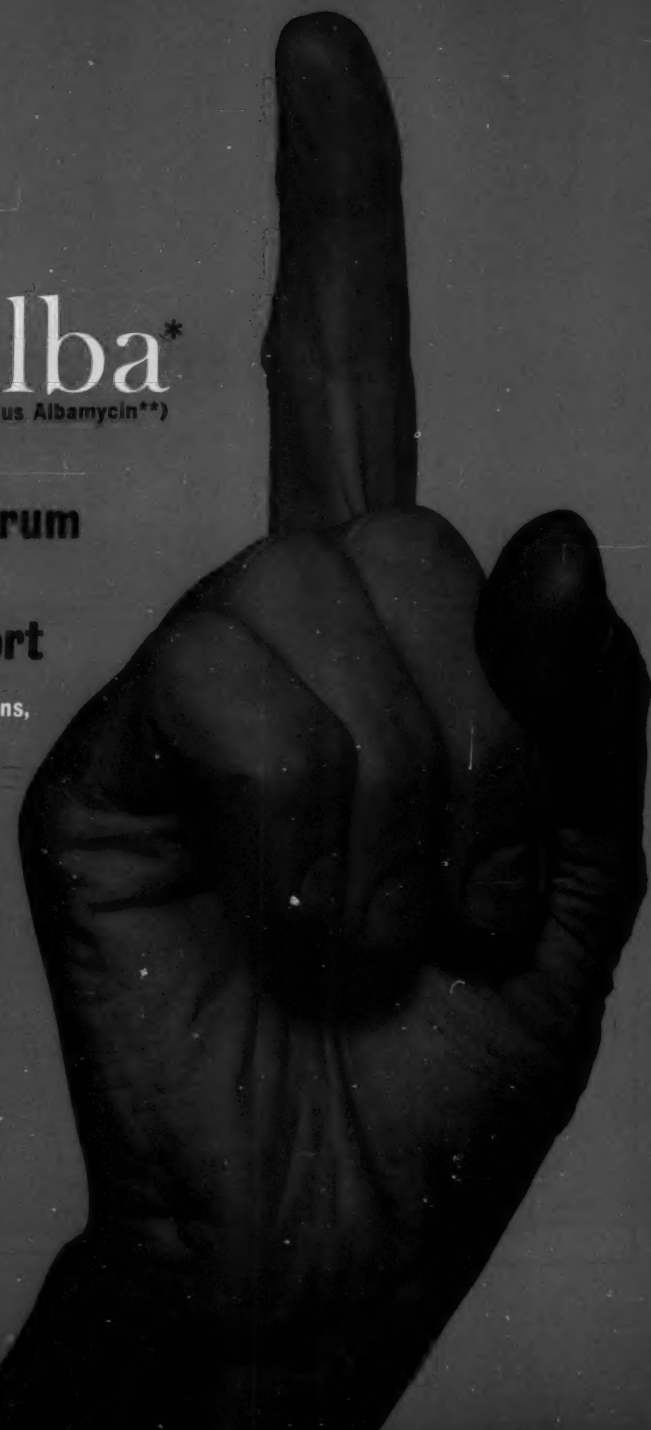
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